SERVICE MANUAL

SAT-W60 RM-Y804

U.S. Model

SAT-W60

RM-Y804

SPECIFICATIONS

Terminals:
Video In (2)
Video Out (2)
Audio (R/L) In (2)
Audio (R/L) Out (2)
S-Video In (1) /Out (1)
Tel Line (1)
Microphone In (1)
Printer Port (DB25) (1)
VCR Control (1)
Digital Audio Out (1)
USB Port (2)
Satellite In (2)
CH3-CH4 Switch (1)
VHF/UHF In/Out (1)
AC In (1)

Dimensions: (w/h/d)
430 x 70 x 290 mm (w/h/d)
(17 x $2^{3/4}$ x $11^{1/2}$ inches)

Weight:
Approx. 4.3 kg (9.4 lbs.)

Power Requirements:
AC 120V

Power Consumption:
90 W Max

Supplied Accessories:
Remote Control RM-Y804 (1)
Size AA Batteries (2)
AC Power Cord (1)
A/V (Audio/Video) Cable (1)
Telephone Cable (1)
S-Video Cable (1)
T Splitter (1)
Coaxial Cable (1)
IR Blaster (1)
Wireless Keyboard KI-W250 (1)
Access Card (1)

Optional Accessories:
Local Antenna ANJ-AA1
Installation Kit ANJ-DS2
Amplifier EAC-DA1
Diplexer EAC-DD1
Voltage Switch EAC-DV2
Satellite Dish Antenna: SAN-24MD1
SAN-18D4

Design and specifications are subject to change without notice.

ultimateTV™ DIRECTV®

9-965-897-02

INTERNET TERMINAL

SONY®

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are “pinched” or contact high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cords for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
7. Check the B+ and HV to see if they are specified values. Make sure your instruments are accurate; be suspicious of your HV meter if sets always have low HV.
8. Check the antenna terminals, metal trim, “metallized" knobs, screws, and all other exposed metal parts for AC Leakage. Check leakage as described below.

Leakage Test

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampere). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instructions.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low voltage scale. The Simpson's 250 and Sanwa SH-63Trd are examples of passive VOMs that are suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Figure A)

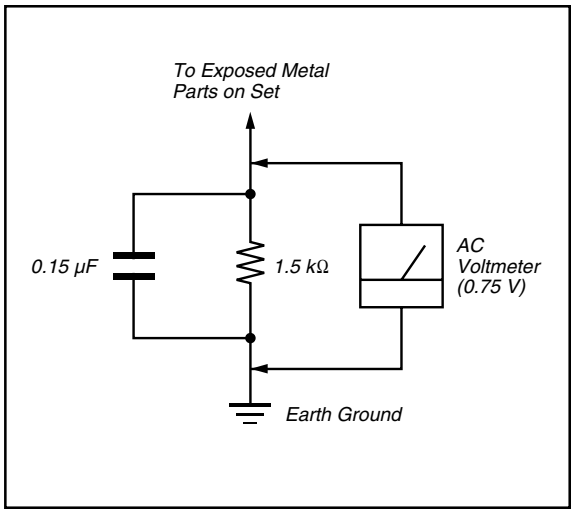

Figure A

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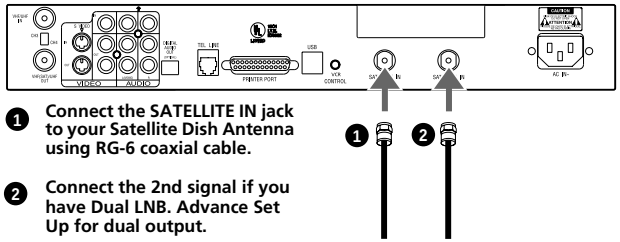
The instructions mentioned here are partial abstracts from the Operating Instruction Manual.
The page numbers shown reflect those of the Operating Instruction Manual.

Step 1: Connecting the Antenna

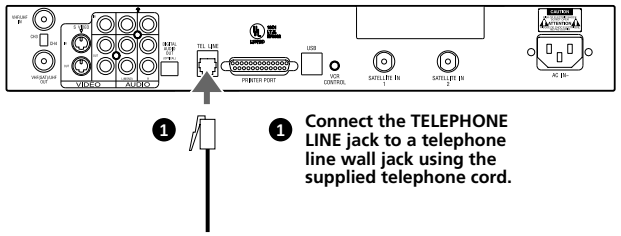
Satellite Receiver



1. Connect the SATELLITE IN jack to your Satellite Dish Antenna using RG-6 coaxial cable.
2. Connect the 2nd signal if you have Dual LNB. Advance Set Up for dual output.

Step 2: Connecting Your Phone Line

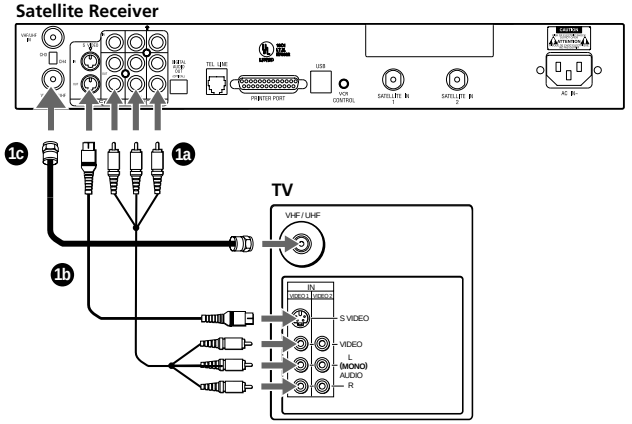
Satellite Receiver



1. Connect the TELEPHONE LINE jack to a telephone line wall jack using the supplied telephone cord.

Step 3: Connecting Your TV Set

Satellite Receiver



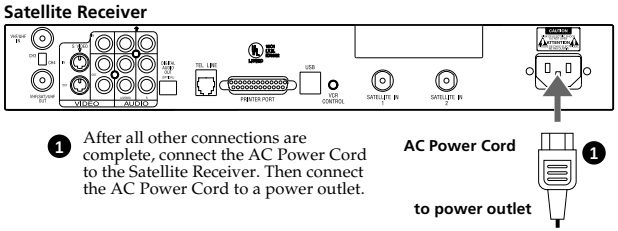
1a If your TV has A/V input jacks
Connect the VIDEO OUT jacks on your Satellite Receiver to the A/V input jacks on your TV using the supplied A/V cable. (Be sure to match the colors on the jacks with the colored plugs on the A/V cable.) If your TV has only one audio input, connect it to the L(MONO) jack on the Satellite Receiver.

1b If your TV has an S-Video input
Use an S-Video cable instead of the yellow video connection. S-Video cable is supplied.

1c If your TV does not have A/V jacks
Connect the VHF/UHF OUT jack to the VHF/UHF input jack on your TV using coaxial cable. Set the CH3/CH4 switch to the channel that does not carry off-air broadcasts in your area.

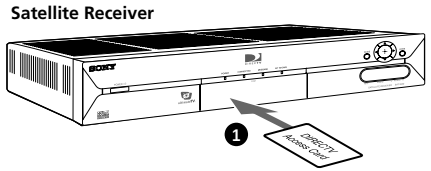
Note
With this connection, your input source is channel 3 or channel 4 depending on how you set the CH3/CH4 switch on the Satellite Receiver.

Step 4: Connecting the AC Power



1 After all other connections are complete, connect the AC Power Cord to the Satellite Receiver. Then connect the AC Power Cord to a power outlet.

Step 5: Checking the Access Card



1 Open the access door by applying gentle pressure to the latch and releasing. Make sure the DIRECTV Access Card is firmly inserted into the front left hand slot of the Satellite Receiver. After the DIRECTV Access Card is inserted (correctly), **DO NOT** remove it unless instructed to do so by your service provider.

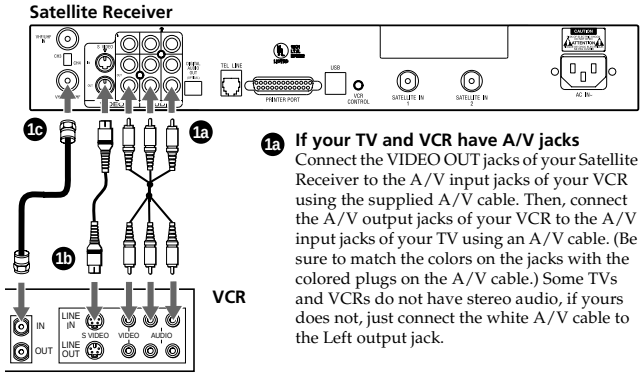
Step 6: Activating Your Service

After checking the DIRECTV Access Card and your Satellite Dish Antenna is installed, you are ready to begin enjoying service.

Call DIRECTV at 1-800-DIRECTV (347-3288) to begin digital satellite programming.

For DIRECTV and UltimateTV operational instructions, please refer to the User Guide.

Advanced Connection: Connecting Your VCR



1a If your TV and VCR have A/V jacks
Connect the VIDEO OUT jacks of your Satellite Receiver to the A/V input jacks of your VCR using the supplied A/V cable. Then, connect the A/V output jacks of your VCR to the A/V input jacks of your TV using an A/V cable. (Be sure to match the colors on the jacks with the colored plugs on the A/V cable.) Some TVs and VCRs do not have stereo audio, if yours does not, just connect the white A/V cable to the Left output jack.

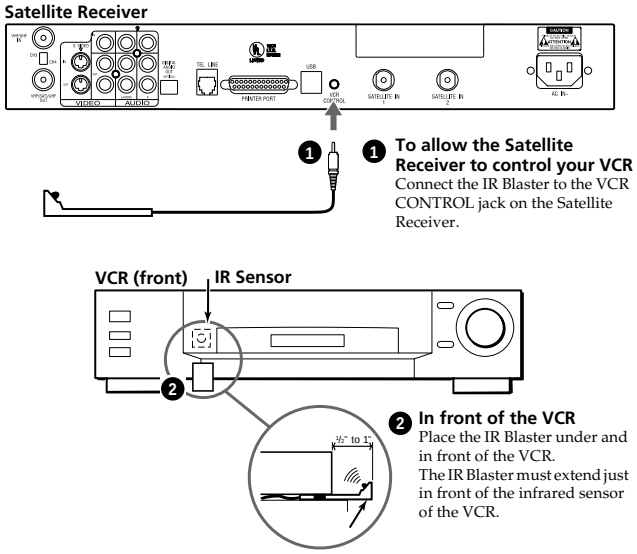
1b If your TV and VCR have S-Video jacks
Use an S-Video cable instead of the yellow video connection. S-Video cable is supplied.

Tip
To allow your Satellite Receiver to control the recording functions of your VCR, see page 14.

1c If your TV and VCR do not have A/V jacks
Connect the VHF(SAT)/UHF OUT jack on the Satellite Receiver to the VHF/UHF input jack on your VCR using coaxial cable.
Then, connect the VHF/UHF output jack on your VCR to the VHF/UHF input jack on your TV using a second coaxial cable.
Set the CH3/CH4 switch to the channel that does not carry off-air broadcasts in your area.

Note
With this connection, your input source is channel 3 or channel 4 depending on how you set the CH3/CH4 switch on

Advanced Connection: Connecting Your IR Blaster

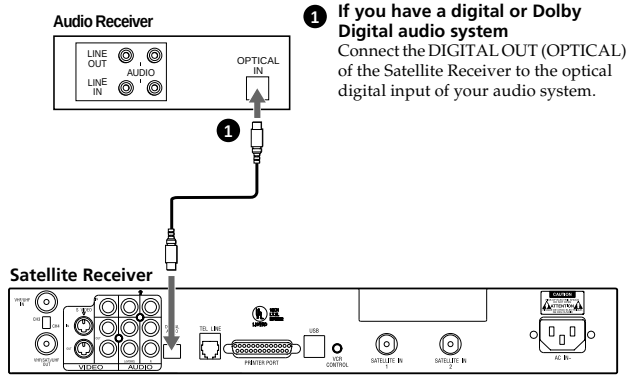


1 To allow the Satellite Receiver to control your VCR
Connect the IR Blaster to the VCR CONTROL jack on the Satellite Receiver.

2 In front of the VCR
Place the IR Blaster under and in front of the VCR.
The IR Blaster must extend just in front of the infrared sensor of the VCR.

Tip
If the infrared sensor is not marked on your VCR, shine a flashlight into the front panel of the VCR to locate the sensor.

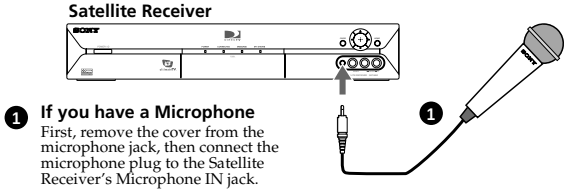
Advanced Connection: Connecting an Audio System



1 If you have a digital or Dolby Digital audio system
Connect the DIGITAL OUT (OPTICAL) of the Satellite Receiver to the optical digital input of your audio system.

Tip
If you connect your Satellite Receiver to a Dolby Digital receiver, set the Dolby Digital option of the Audio display to Auto Select.

Advanced Connection: Connecting a Microphone



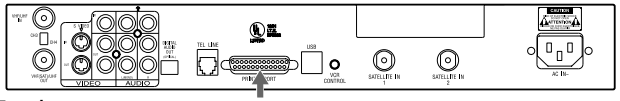
1 If you have a Microphone
First, remove the cover from the microphone jack, then connect the microphone plug to the Satellite Receiver's Microphone IN jack.

Tip
Check "Help" screen for a list of compatible microphones.

Advanced Connection: Connecting a Printer

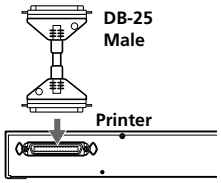
Connecting a printer to your Satellite Receiver enables you to print Web pages and e-mail messages. The Satellite Receiver is not compatible with all printers. Check the on-line instructions for a list of the latest compatible printers.

Satellite Receiver



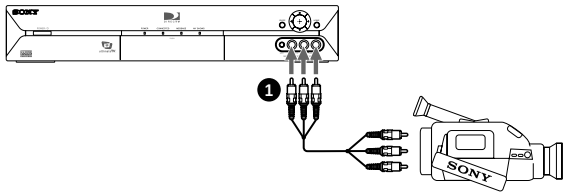
To print screens
Connect the printer port on the Satellite Receiver to the port on the printer.

Note
Unplug the Satellite Receiver and printer before you begin connecting.



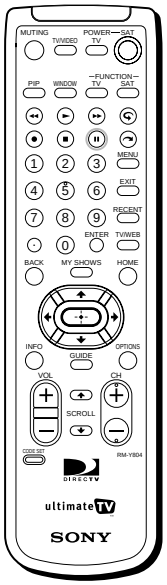
Advanced Connection: Connecting a Camcorder

Satellite Receiver



1 If you have a Camcorder
First, remove the cover from the A/V jacks, then, using A/V cables, connect the camcorder's A/V OUT jacks to the Satellite Receiver's A/V IN jacks.

Note
If you have a mono camcorder, connect its left audio output to the Satellite Receiver's AUDIO L (white) jack.



Muting	Press to mute the sound. Press again, or press VOL +, to restore the sound. (For the TV only)
TV/VIDEO	Cycles through the video inputs of your TV.
TV POWER	Turns your TV on and off.
SAT POWER	Turns your Satellite Receiver on and off.
PIP	Turns the Picture-in-Picture features of the Satellite Receiver on and off.
WINDOW	Selects the active window while in PIP mode, allowing you to change the Main or PIP window.(For the Satellite Receiver only)
TV FUNCTION	Selects TV feature control.
SAT FUNCTION	Selects Satellite Receiver feature control.
Button	Review button.
Button	Play button.
Button	Forward scan button.
Button	Record button.
Button	Stop button.
Button	Pause button.
Button	Replay button.
Button	Jump ahead button.
0 – 9 Buttons	Select channels or enter numbers in text boxes.
	Adds period to separate major/minor channel numbers.
MENU	Opens the TV Main Menu.
EXIT	Closes all on-screen displays, including program guides and menus.
ENTER	Activates the selected channel on your TV.

OPTIONS	Displays the OPTIONS panel.
RECENT	Displays and allows you to access the most recently viewed Web pages and TV channels.
SCROLL ↑/↓ Buttons	Moves the page up or down when the page is too long to be displayed on the screen.
HOME	Displays the Web Home or TV Home screen.
BACK	Displays the last screen viewed, or hides the on-screen keyboard.
TV/WEB	Press the button to switch between TV and WebTV modes.
Arrow Buttons	Move the yellow highlight box to a different command or activity on the screen; select different keys when the on-screen keyboard is displayed.
MY SHOWS	Displays a list of programs that you have recorded with your Satellite Receiver.
INFO	Displays information on the program you are viewing.
GUIDE	Displays information on available programs, including channel, time and date.
⌖ Button	Activates a highlighted link or command; displays the on-screen keyboard.
VOL +/–	Increases and decreases the volume.
CH +/–	Moves to the next or previous channel.
CODE SET	Used for programming the remote control to operate your TV. See page 21 for details.

Satellite Receiver

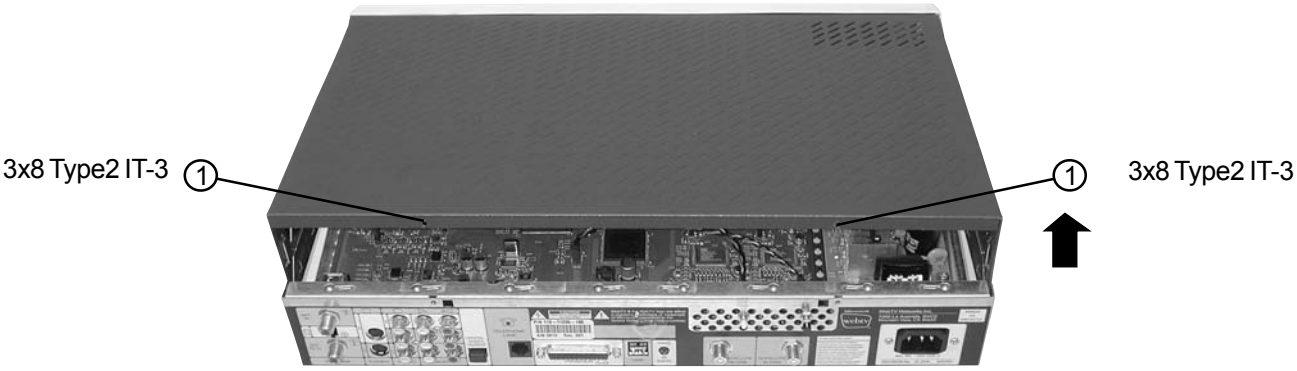
Troubleshooting

Symptom	Possible Cause and remedies
TV POWER button doesn't turn on TV.	The remote control has not been properly programmed. See "Setting up the Remote Control" on page 21. The batteries in the remote control or wireless keyboard could be weak. Check the batteries and replace them if necessary.
No picture, no sound.	Make sure the AC Power Cord is connected. Check that the TV/VIDEO switch is set correctly. Make sure the Satellite Receiver is properly connected. If you connected using a S-Video or A/V cables, make sure they are properly connected. If your TV must be set to a certain channel to view other devices to which it is connected, make sure this channel is selected. Check that the correct video input is selected by pressing the TV/VIDEO button. If your TV is not connected using the S-Video or A/V cables, set the CH3-CH4 switch on the back of the Satellite Receiver to the opposite channel to which it is currently set.
No sound.	If you connected the Satellite Receiver using A/V cables, make sure the cables are properly connected.
Can't change TV channels while using WebTV service.	Make sure you select the TV FUNCTION button.
The WebTV service screens disappear after pressing the CHANNEL +/– buttons.	Press the TV/VIDEO button on the remote control until the WebTV screen appears.
VCR Control doesn't seem to be working correctly.	Check that the IR Blaster is positioned directly in front of the infrared sensor area of your cable box and/or VCR. Follow the on-line instructions in the "Settings" link, accessible from the TV Home page of the WebTV service.

Symptom	Possible Cause and remedies
The Satellite Receiver gets extremely hot.	Check the placement of the Satellite Receiver. Place the Satellite Receiver in a location with adequate ventilation. Do not place the Satellite Receiver in a cabinet or on a TV. If the heat is excessive, contact your Sony dealer.
The Satellite Receiver turns off and on by itself.	This is often caused by static build up. Turn off the Satellite Receiver and disconnect the AC Power Cord from the power outlet. Then reconnect the AC Power Cord to the power outlet and turn on the Satellite Receiver. If this does not solve the problem, contact your Sony dealer.
The Satellite Receiver will not turn on.	Make sure the AC Power Cord is securely connected to the Satellite Receiver and a power outlet.
The Satellite Receiver will not connect to the WebTV Network after receiving an upgrade from the WebTV service.	Turn off the Satellite Receiver and disconnect the AC Power Cord from the power outlet. Then reconnect the AC Power Cord to the power outlet and turn on the Satellite Receiver. You may need to repeat this procedure three or four times to solve the problem.
The Message Indicator light is not working.	You can set your Satellite Receiver to check for messages automatically. However, if you check for messages yourself before the Satellite Receiver is set to do so automatically, the Message Indicator may not light until the Satellite Receiver checks again. You may want to consider setting the Satellite Receiver to check for mail when you usually are not connected.
Remote control or keyboard is no longer working.	Replace the batteries. Try pressing the SAT FUNCTION button.
No channels are viewable.	Activate your service by contacting DIRECTV at **1-800-DIRECTV (347-3288)** Check the status of your service with UltimateTV at **1-877-ULTIMATE (858-4628)**

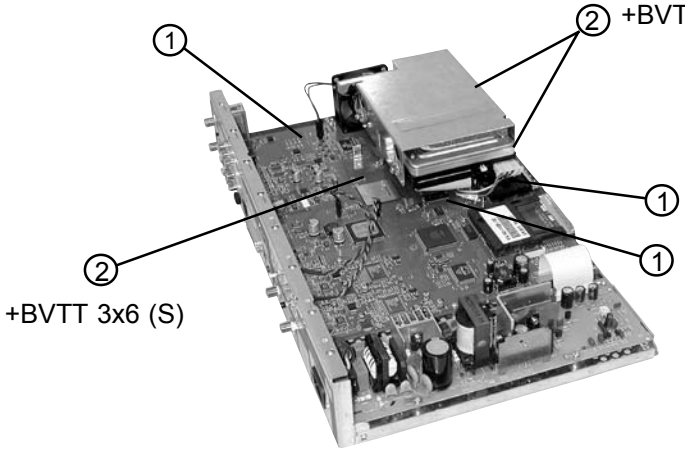
SECTION 2
DISASSEMBLY

2-1. UPPER COVER REMOVAL

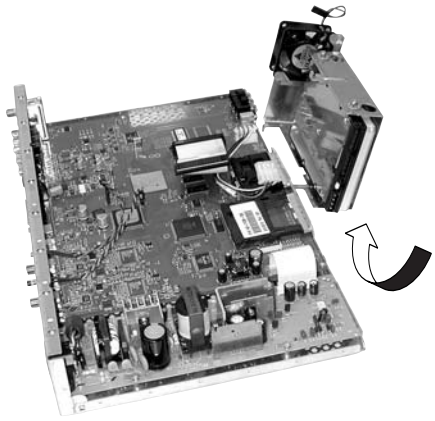


1. Remove Two (2) Screws
2. Pull Upper Cover up approximately 3 inches.
3. Slide forward making sure to slide the tabs out of the lower case front.

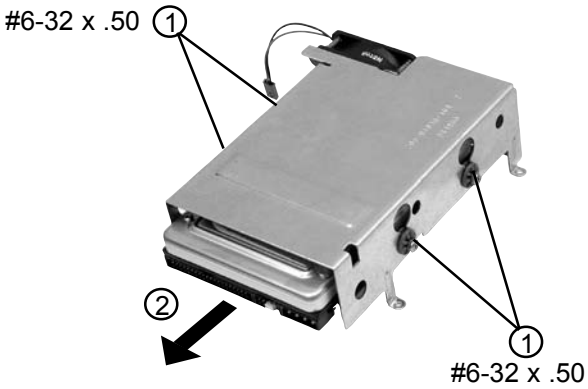
2-2. HARD DRIVE REMOVAL



1. Disconnect three (3) cables
2. Remove the three (3) screws from the Hard Drive Bracket



1. Remove Hard Drive



NOTE:
1. Remove the four (4) screws to remove Hard Drive from Bracket
2. Slide Hard Drive from Bracket

SECTION 3
SYSTEM SELF TEST

SELF TEST:

1. From home page go to [settings].

2. Go to [system test].
   a. Connect a phone line to the phone jack on the back of the unit.
   b. Connect both tuners to a SAT signal.
   c. Make sure that the CAM card is in.

3. Press [Run Test].
   This test checks both tuner's signal and that the modem detects a dial tone. Also, it checks that the CAM card is inserted and valid. Test will show the serial number on the card.

4. Go to [Receiver Info] from the same system test menu.
   This provides the following information on the box:
   - Manufacturer: Sony Model number:
   - Serial number:
   - Client software:
   - Boot rom version:
   - SSID:

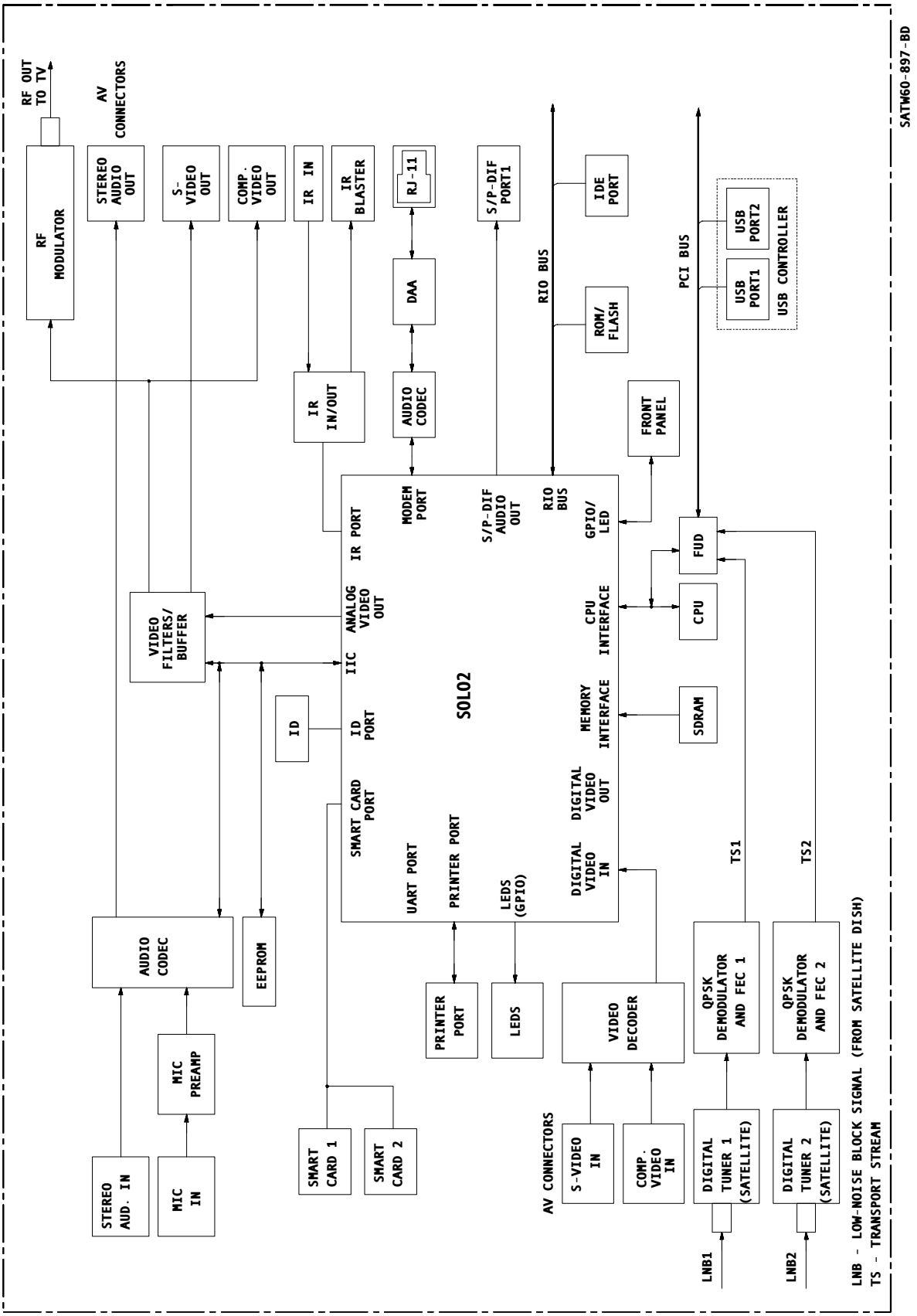
5. To show the date the box was last upgraded along with the version, select [Upgrades] from the SAT receiver information menu.

6. Go to the settings menu and select [Hooking Up]

7. Go to [Signal Strength]
   This will show the signal strength for each tuner. It is also possible to change transponder numbers to verify both even and odd transponders.

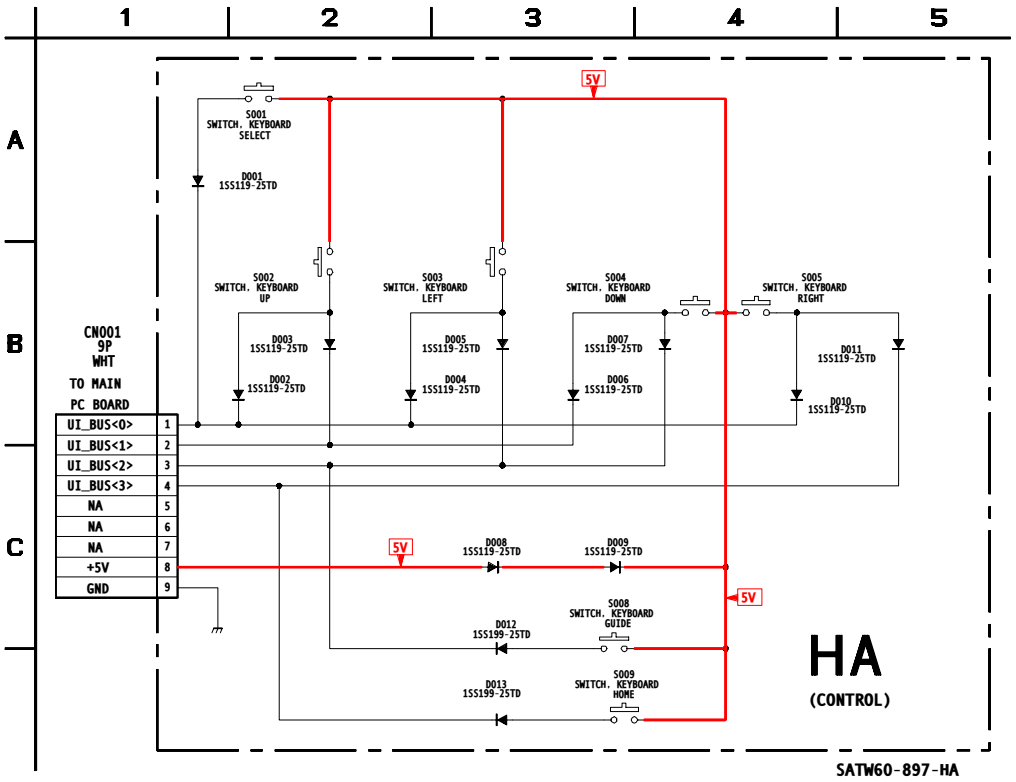
SECTION 4
DIAGRAMS

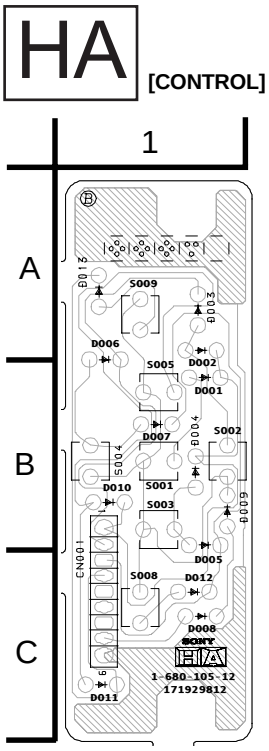
4-1. BLOCK DIAGRAM



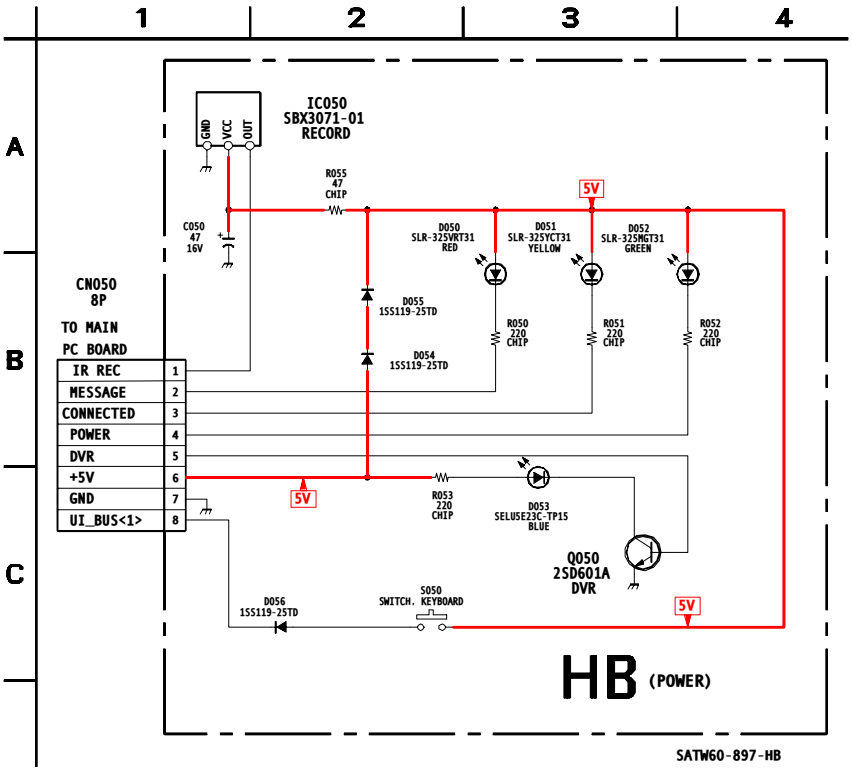
4-2. SCHEMATIC DIAGRAMS

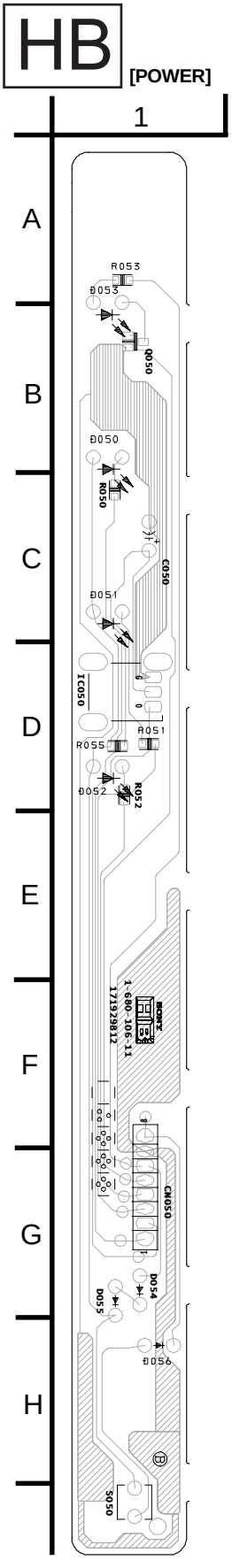
HA Board Schematic Diagram

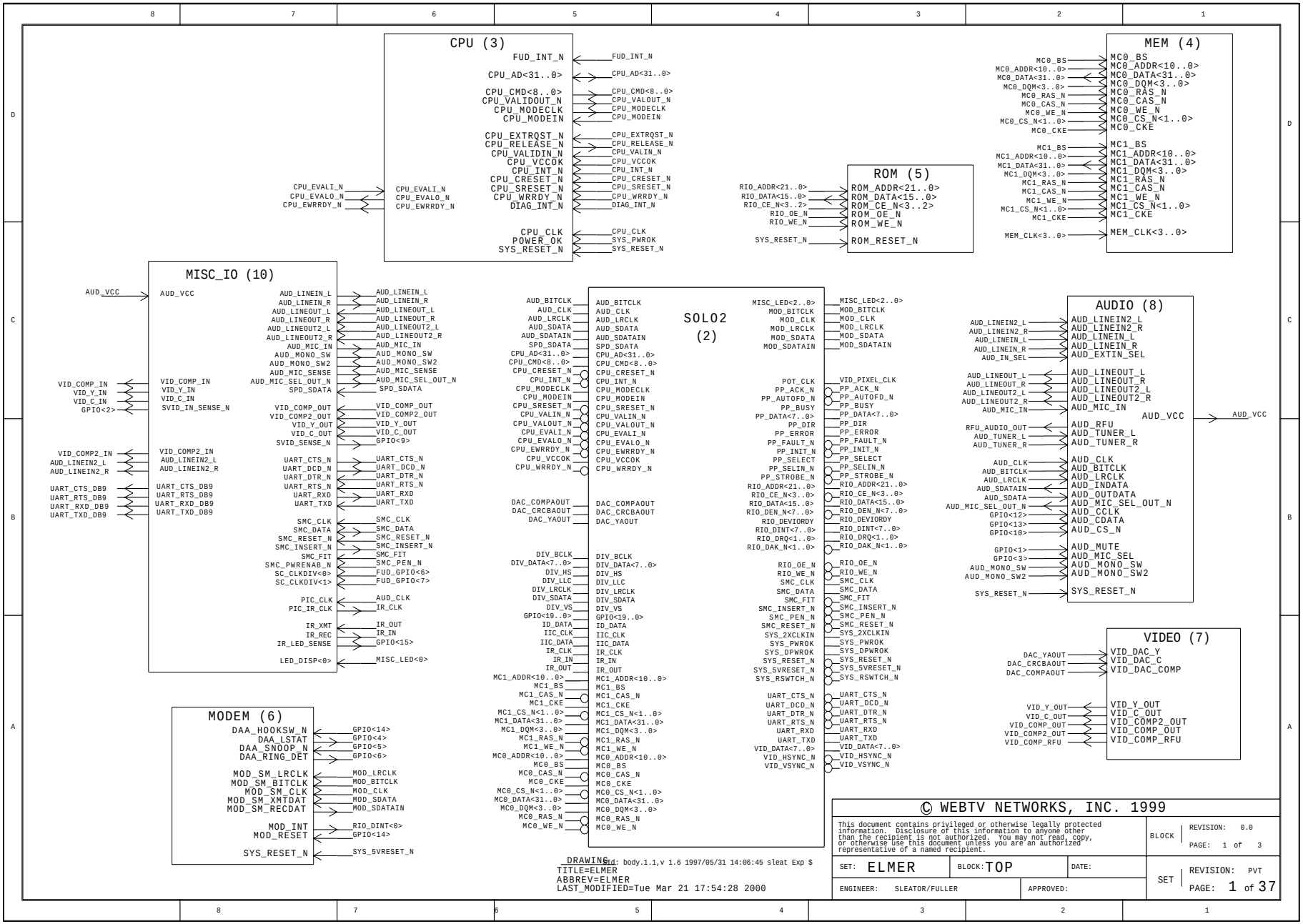




HB Board Schematic Diagram






CPU (3)
FUD_INT_N
CPU_AD<31..0>
CPU_CMD<8..0>
CPU_VALIDOUT_N
CPU_MODECLK
CPU_MODEIN
CPU_EXTRQST_N
CPU_RELEASE_N
CPU_VALIDIN_N
CPU_VCCOK
CPU_INT_N
CPU_CRESET_N
CPU_SRESET_N
CPU_WRRDY_N
DIAG_INT_N
CPU_CLK
POWER_OK
SYS_RESET_N
CPU_EVALI_N
CPU_EVALO_N
CPU_EWRRDY_N
MEM (4)
MC0_BS
MC0_ADDR<10..0>
MC0_DATA<31..0>
MC0_DQM<3..0>
MC0_RAS_N
MC0_CAS_N
MC0_WE_N
MC0_CS_N<1..0>
MC0_CKE
MC1_BS
MC1_ADDR<10..0>
MC1_DATA<31..0>
MC1_DQM<3..0>
MC1_RAS_N
MC1_CAS_N
MC1_WE_N
MC1_CS_N<1..0>
MC1_CKE
MEM_CLK<3..0>
ROM (5)
RIO_ADDR<21..0>
RIO_DATA<15..0>
RIO_CE_N<3..2>
RIO_OE_N
RIO_WE_N
SYS_RESET_N
ROM_ADDR<21..0>
ROM_DATA<15..0>
ROM_CE_N<3..2>
ROM_OE_N
ROM_WE_N
ROM_RESET_N
MISC_IO (10)
AUD_VCC
VID_COMP_IN
VID_Y_IN
VID_C_IN
GPIO<2>
SVID_IN_SENSE_N
VID_COMP2_IN
AUD_LINEIN2_L
AUD_LINEIN2_R
UART_CTS_DB9
UART_RTS_DB9
UART_RXD_DB9
UART_TXD_DB9
AUD_LINEIN_L
AUD_LINEIN_R
AUD_LINEOUT_L
AUD_LINEOUT_R
AUD_LINEOUT2_L
AUD_LINEOUT2_R
AUD_MIC_IN
AUD_MONO_SW
AUD_MONO_SW2
AUD_MIC_SENSE
AUD_MIC_SEL_OUT_N
SPD_SDATA
VID_COMP_OUT
VID_COMP2_OUT
VID_Y_OUT
VID_C_OUT
SVID_SENSE_N
UART_CTS_N
UART_DCD_N
UART_DTR_N
UART_RTS_N
UART_RXD
UART_TXD
SMC_CLK
SMC_DATA
SMC_RESET_N
SMC_INSERT_N
SMC_FIT
SMC_PWRENAB_N
SC_CLKDIV<0>
SC_CLKDIV<1>
PIC_CLK
PIC_IR_CLK
IR_XMT
IR_REC
IR_LED_SENSE
LED_DISP<0>
IR_OUT
IR_IN
GPIO<15>
MISC_LED<0>
SOL02 (2)
AUD_BITCLK
AUD_CLK
AUD_LRCLK
AUD_SDATA
AUD_SDATAIN
SPD_SDATA
CPU_AD<31..0>
CPU_CMD<8..0>
CPU_CRESET_N
CPU_INT_N
CPU_MODECLK
CPU_MODEIN
CPU_SRESET_N
CPU_VALIN_N
CPU_VALOUT_N
CPU_EVALI_N
CPU_EVALO_N
CPU_EWRRDY_N
CPU_VCCOK
CPU_WRRDY_N
DAC_COMPAOUT
DAC_CRCBAOUT
DAC_YAOUT
DIV_BCLK
DIV_DATA<7..0>
DIV_HS
DIV_LLC
DIV_LRCLK
DIV_SDATA
DIV_VS
GPIO<19..0>
ID_DATA
IIC_CLK
IIC_DATA
IR_CLK
IR_IN
IR_OUT
MC1_ADDR<10..0>
MC1_BS
MC1_CAS_N
MC1_CKE
MC1_CS_N<1..0>
MC1_DATA<31..0>
MC1_DQM<3..0>
MC1_RAS_N
MC1_WE_N
MC0_ADDR<10..0>
MC0_BS
MC0_CAS_N
MC0_CKE
MC0_CS_N<1..0>
MC0_DATA<31..0>
MC0_DQM<3..0>
MC0_RAS_N
MC0_WE_N
MISC_LED<2..0>
MOD_BITCLK
MOD_CLK
MOD_LRCLK
MOD_SDATA
MOD_SDATAIN
POT_CLK
PP_ACK_N
PP_AUTOFD_N
PP_BUSY
PP_DATA<7..0>
PP_DIR
PP_ERROR
PP_FAULT_N
PP_INIT_N
PP_SELECT
PP_SELIN_N
PP_STROBE_N
RIO_ADDR<21..0>
RIO_CE_N<3..0>
RIO_DATA<15..0>
RIO_DEN_N<7..0>
RIO_DEVIORDY
RIO_DINT<7..0>
RIO_DRQ<1..0>
RIO_DAK_N<1..0>
RIO_OE_N
RIO_WE_N
SMC_CLK
SMC_DATA
SMC_FIT
SMC_INSERT_N
SMC_PEN_N
SMC_RESET_N
SYS_2XCLKIN
SYS_PWROK
SYS_DPWROK
SYS_RESET_N
SYS_5VRESET_N
SYS_RSWTCH_N
UART_CTS_N
UART_DCD_N
UART_DTR_N
UART_RTS_N
UART_RXD
UART_TXD
VID_DATA<7..0>
VID_HSYNC_N
VID_VSYNC_N
VID_PIXEL_CLK
AUDIO (8)
AUD_LINEIN2_L
AUD_LINEIN2_R
AUD_LINEIN_L
AUD_LINEIN_R
AUD_EXTIN_SEL
AUD_LINEOUT_L
AUD_LINEOUT_R
AUD_LINEOUT2_L
AUD_LINEOUT2_R
AUD_MIC_IN
AUD_VCC
RFU_AUDIO_OUT
AUD_TUNER_L
AUD_TUNER_R
AUD_CLK
AUD_BITCLK
AUD_LRCLK
AUD_INDATA
AUD_OUTDATA
AUD_MIC_SEL_OUT_N
AUD_CCLK
AUD_CDATA
AUD_CS_N
GPIO<1>
GPIO<3>
AUD_MUTE
AUD_MIC_SEL
AUD_MONO_SW
AUD_MONO_SW2
SYS_RESET_N
VIDEO (7)
DAC_YAOUT
DAC_CRCBAOUT
DAC_COMPAOUT
VID_DAC_Y
VID_DAC_C
VID_DAC_COMP
VID_Y_OUT
VID_C_OUT
VID_COMP_OUT
VID_COMP2_OUT
VID_COMP_RFU
MODEM (6)
DAA_HOOKSW_N
DAA_LSTAT
DAA_SNOOP_N
DAA_RING_DET
MOD_SM_LRCLK
MOD_SM_BITCLK
MOD_SM_CLK
MOD_SM_XMTDAT
MOD_SM_RECDAT
MOD_INT
MOD_RESET
SYS_RESET_N
GPIO<14>
GPIO<4>
GPIO<5>
GPIO<6>
MOD_LRCLK
MOD_BITCLK
MOD_CLK
MOD_SDATA
MOD_SDATAIN
RIO_DINT<0>
GPIO<14>
SYS_5VRESET_N
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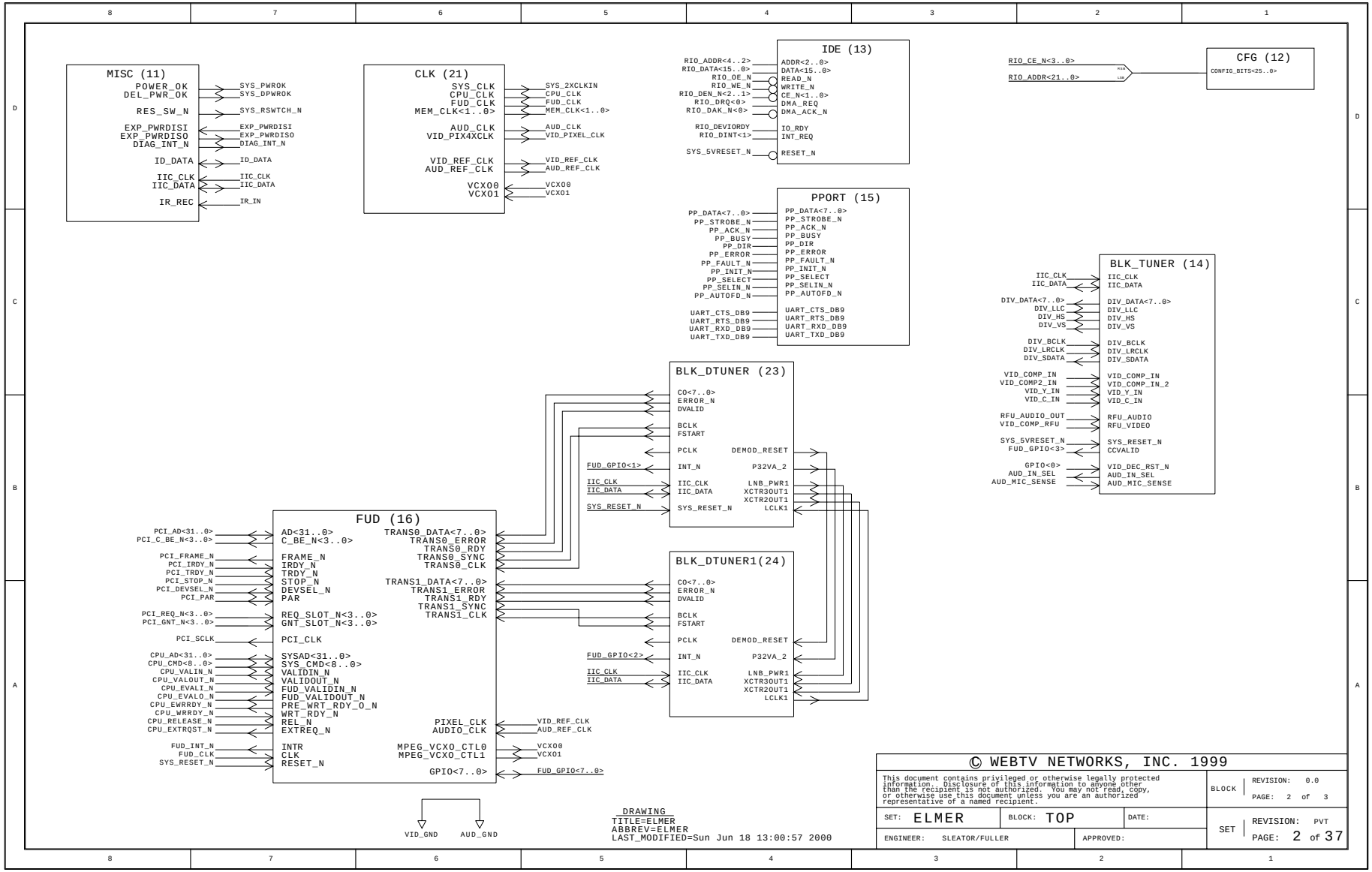
BLOCK
REVISION: 0.0
PAGE: 1 of 3
SET: ELMER
BLOCK: TOP
DATE:
ENGINEER: SLEATOR/FULLER
APPROVED:
SET
REVISION: PVT
PAGE: 1 of 37
DRAWING
Id: body.1.1,v 1.6 1997/05/31 14:06:45 sleat Exp $
TITLE=ELMER
ABBREV=ELMER
LAST_MODIFIED=Tue Mar 21 17:54:28 2000



DRAWING
TITLE=ELMER
ABBREV=ELMER
LAST_MODIFIED=Sun Jun 18 13:00:57 2000

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SET: ELMER	BLOCK: TOP	DATE:	
ENGINEER: SLEATOR/FULLER	APPROVED:		

BLOCK | REVISION: 0.0 | PAGE: 2 of 3

SET | REVISION: PVT | PAGE: 2 of 37

CPU INTERRUPTS

CPU_INT<0>: CPU INTERRUPT FROM SOLO2

CPU_INT<2>: FUD2 INTERRUPT

CPU_INT<4>: DIAG INTERRUPT

RIO ENABLES

0 FREE
1 HARD DISK REGISTER SET 1
2 HARD DISK REGISTER SET 2
3 FREE
4 FREE
5 FREE
6 FREE
7 FREE

RIO_DINT<7..0> MAPPING

0	FREE
1	DISK
2	FREE
3	FREE
4	FREE
5	FREE
6	FREE
7	FREE

SOLO2 GPIO MAP

	GPIO<0>	BT835 RESET
	GPIO<1>	SYS_AUD_MUTE
	GPIO<2>	SVIDEO_IN_SENSE
	GPIO<3>	AUD_MIC_SEL
*	GPIO<4>	DAA_LSTAT
*	GPIO<5>	DAA_SNOOP_N
*	GPIO<6>	DAA_RING_DET
	GPIO<7>	FREE
	GPIO<8>	FREE
	GPIO<9>	SVIDEO_SENSE
	GPIO<10>	SYS_AUD_CS_N
	GPIO<11>	FREE
	GPIO<12>	SYS_AUD_CCLK
	GPIO<13>	SYS_AUD_CDATA
*	GPIO<14>	DAA_HOOKSW_N
	GPIO<15>	IR_BLASTER LED SENSE
	GPIO<16>	UI_BUS<0>
	GPIO<17>	UI_BUS<1>
	GPIO<18>	UI_BUS<2>
	GPIO<19>	UI_BUS<3>

* GPIO'S NEEDED ONLY FOR SOFT MODEM.

IIC DEV ADDRESS MAP

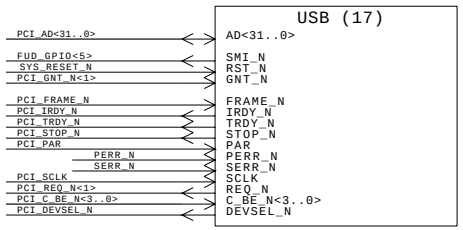
ADDR	DEVICE
0X18	DIGITAL TUNER
0X1A	DIGITAL TUNER 1
0X88	BT835 VIDEO DECODER
0XA0	AT24C01A EEPROM

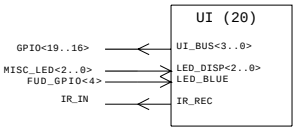
FUD2 GPIO MAP

GPIO<0>	FREE
GPIO<1>	DTUNER_INT
GPIO<2>	DTUNER1 INT
GPIO<3>	BT835 "CLOSED CAPTION" INTERRUPT
GPIO<4>	LED BLUE (RECORD INDICATOR)
GPIO<5>	USB INTERRUPT
GPIO<6>	SC_CLKDIV<0>
GPIO<7>	SC_CLKDIV<1>

BT835 GPIO MAP

GPIO<0>	MIC SENSE (ACT HI IF AUD_MIC_SEL ACTIVE; ACT LO IF AUD_MIC_SEL INACTIVE)
GPIO<1>	FREE
GPIO<2>	FREE
GPIO<3>	RFU_BYPASS
GPIO<4>	FREE
GPIO<5>	AUDIO EXTIN SELECT
GPIO<6>	FREE
GPIO<7>	FREE





FROM THE SUCUNIT DOC

SERIAL/MODEM		SMARTCARD		GPIO	
UART_RXD	(I)	SMC_DATA	(IO)	GPIO[0]	(IO)
UART_TXD	(O)	SMC_CLK	(IO)	GPIO[1]	(IO)
UART_DTR_N	(O)	SMC_PEN_N	(O)	GPIO[2]	(IO)
UART_RTS_N	(O)	SMC_RESET_N	(O)	GPIO[3]	(IO)
UART_CTS_N	(I)	SMC_INSERT_N	(I)	GPIO[4]	(IO)
UART_DCD_N	(I)	SMC_FIT	(I)	GPIO[5]	(IO)

DRAWING
TITLE=ELMER
ABBREV=ELMER
LAST_MODIFIED=Tue Mar 21 17:54:55 2000

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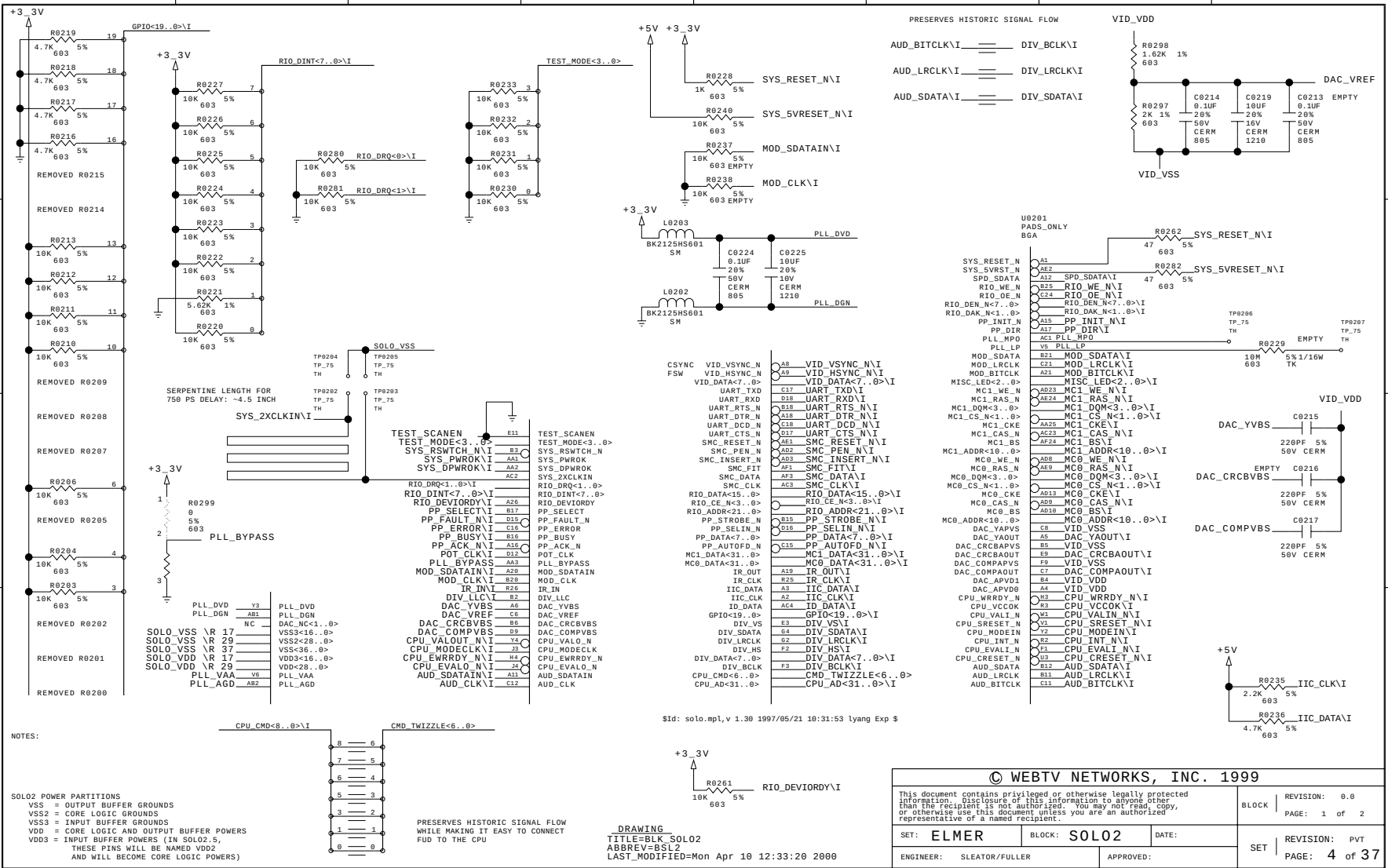
BLOCK | REVISION: 0.0 | PAGE: 3 of 3

SET: ELMER | BLOCK: TOP | DATE:

ENGINEER: SLEATOR/FULLER | APPROVED:

SET | REVISION: PVT | PAGE: 3 of 37



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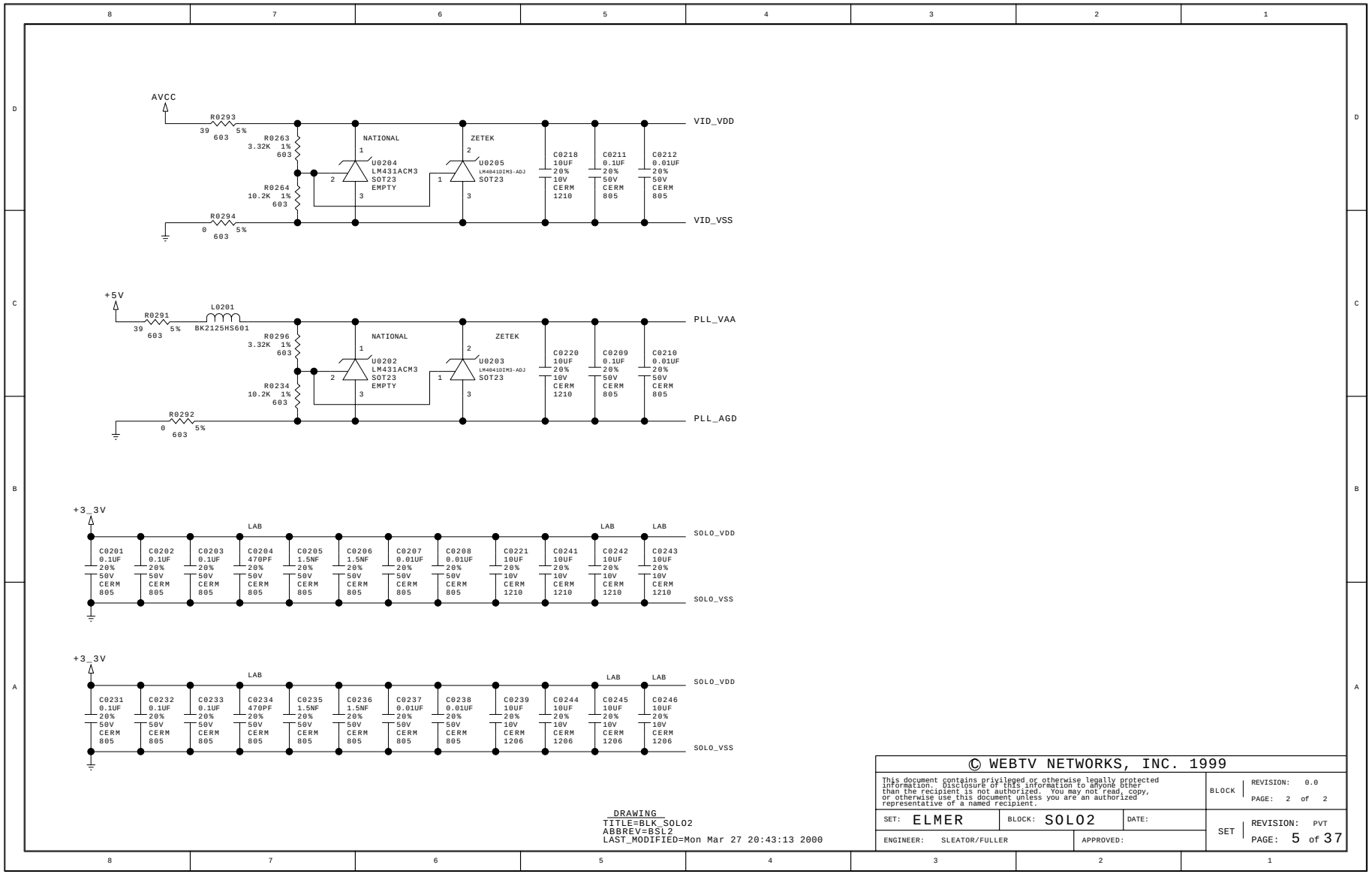
SET: ELMER	BLOCK: SOLO2	DATE:	
ENGINEER: SLEATOR/FULLER	APPROVED:		

BLOCK | REVISION: 0.0 | PAGE: 1 of 2

SET | REVISION: PVT | PAGE: 4 of 37



DRAWING
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ABBREV=BSL2
LAST_MODIFIED=Mon Mar 27 20:43:13 2000

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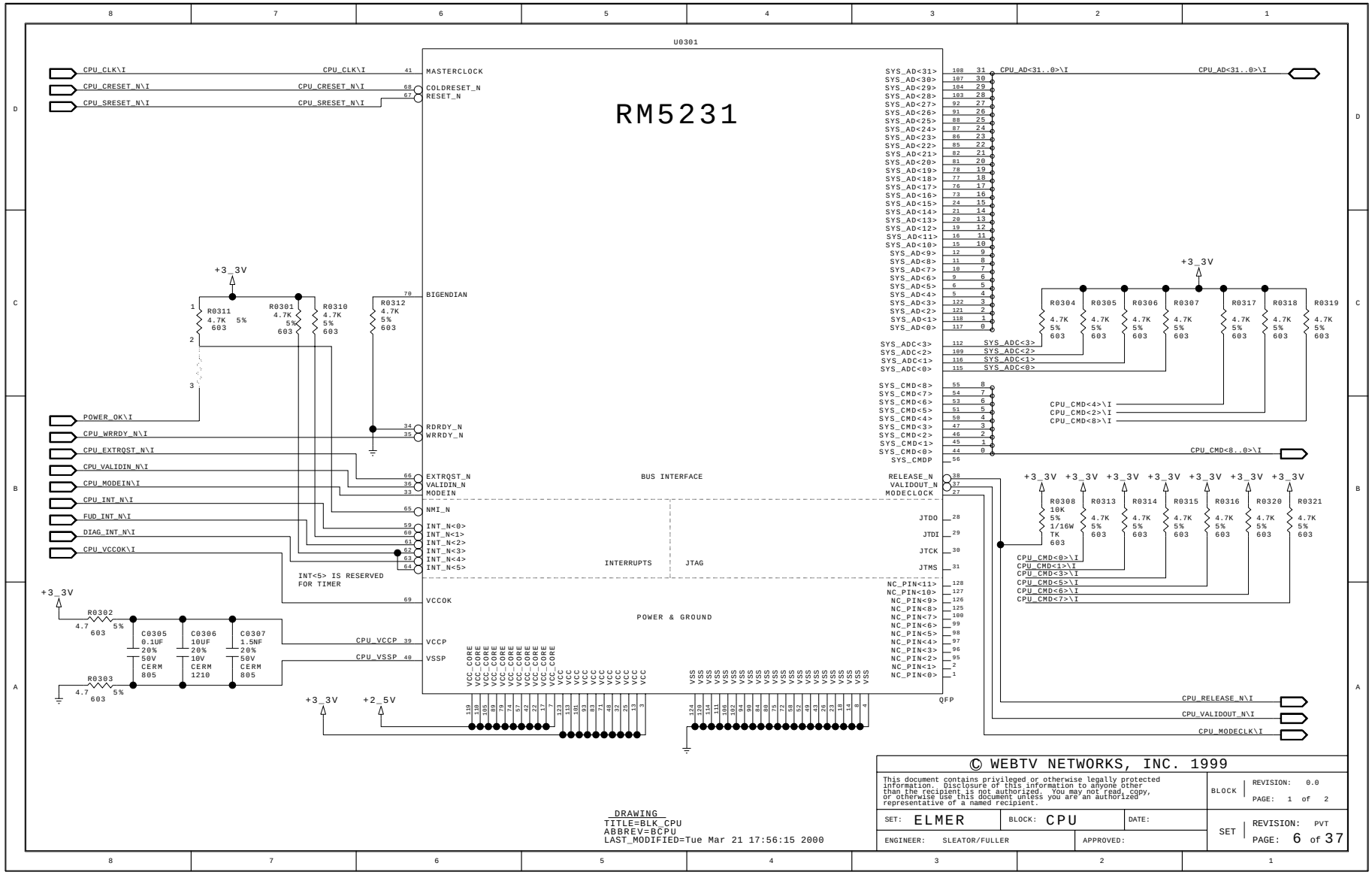
			BLOCK	REVISION: 0.0 PAGE: 2 of 2
SET: ELMER	BLOCK: SOLO2	DATE:		
ENGINEER: SLEATOR/FULLER		APPROVED:	SET	REVISION: PVT PAGE: 5 of 37



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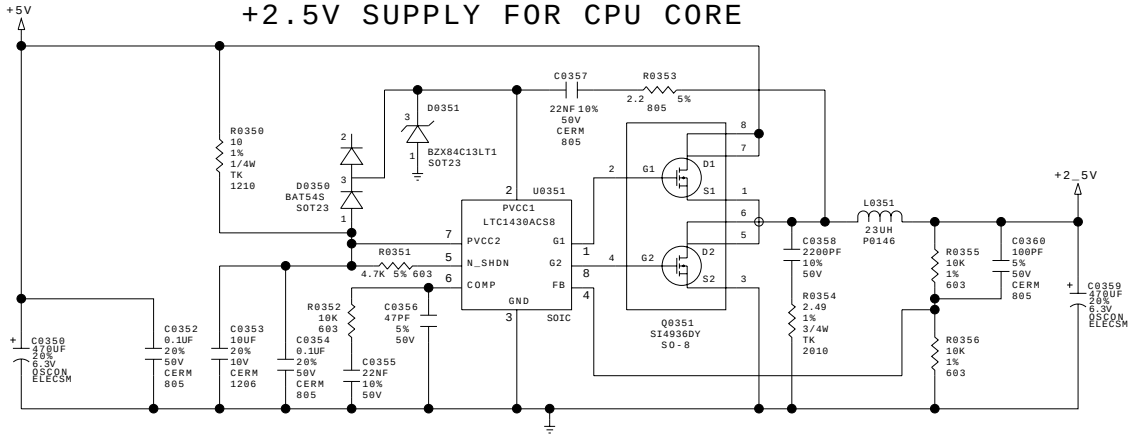
DRAWING
TITLE=BLK_CPU
ABBREV=BCPU
LAST_MODIFIED=Tue Mar 21 17:56:15 2000

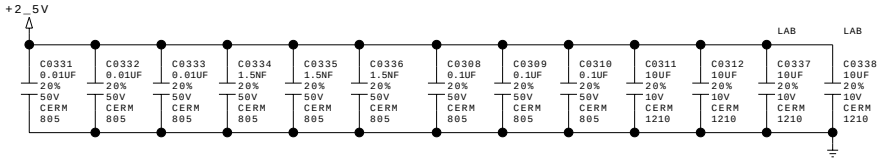
SET: ELMER	BLOCK: CPU	DATE:	
ENGINEER: SLEATOR/FULLER	APPROVED:		

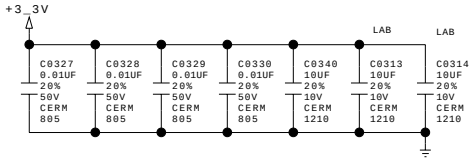
BLOCK | REVISION: 0.0 | PAGE: 1 of 2

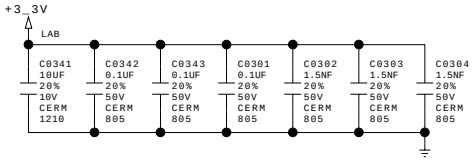
SET | REVISION: PVT | PAGE: 6 of 37

+2.5V SUPPLY FOR CPU CORE









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ABBREV=BCPU
LAST_MODIFIED=Thu May 25 00:43:36 2000

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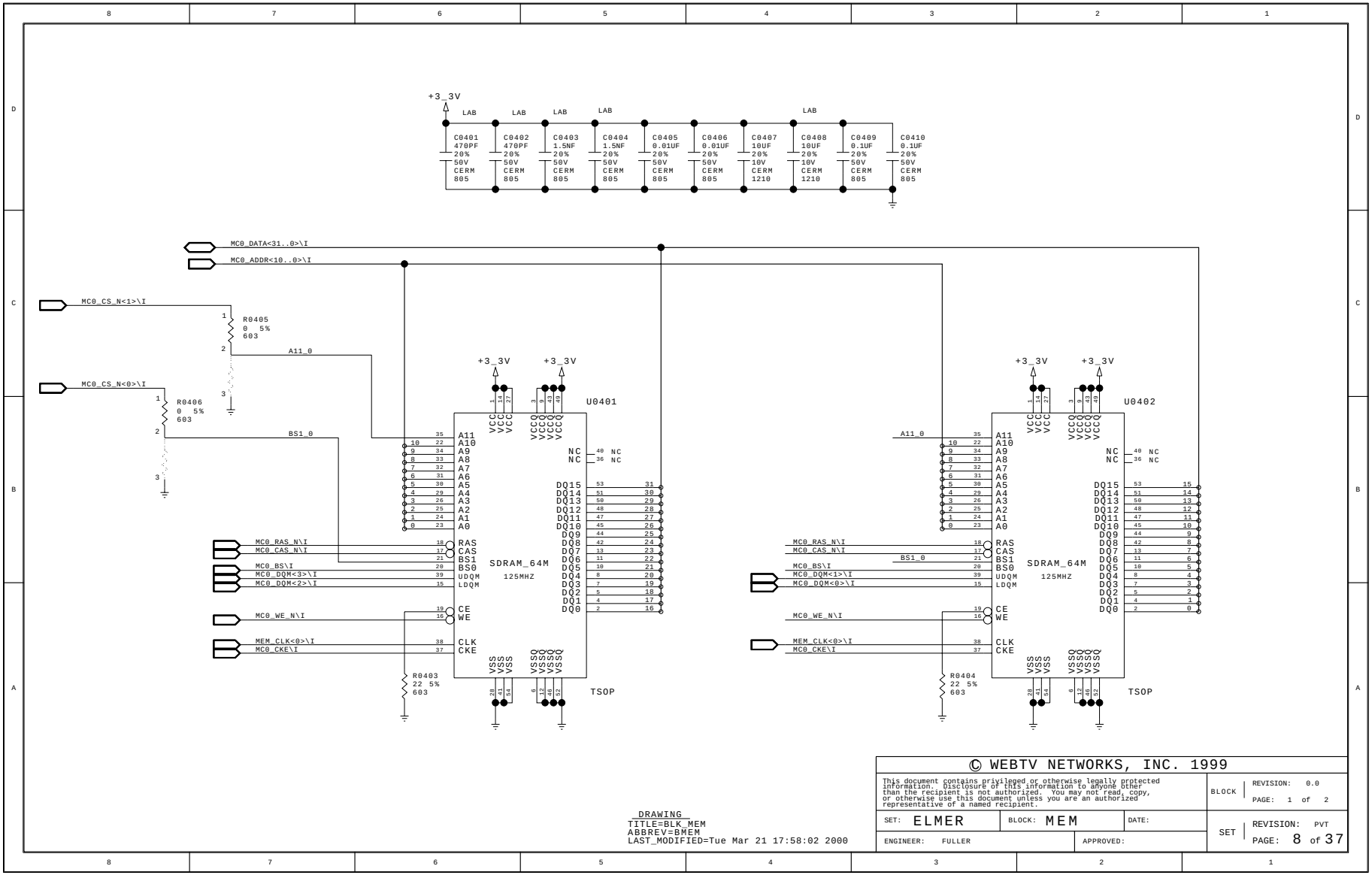
BLOCK	REVISION: 0.0 PAGE: 2 of 2		
SET: ELMER	BLOCK: CPU	DATE:	
ENGINEER: EGNER	APPROVED:	SET	REVISION: PVT PAGE: 7 of 37



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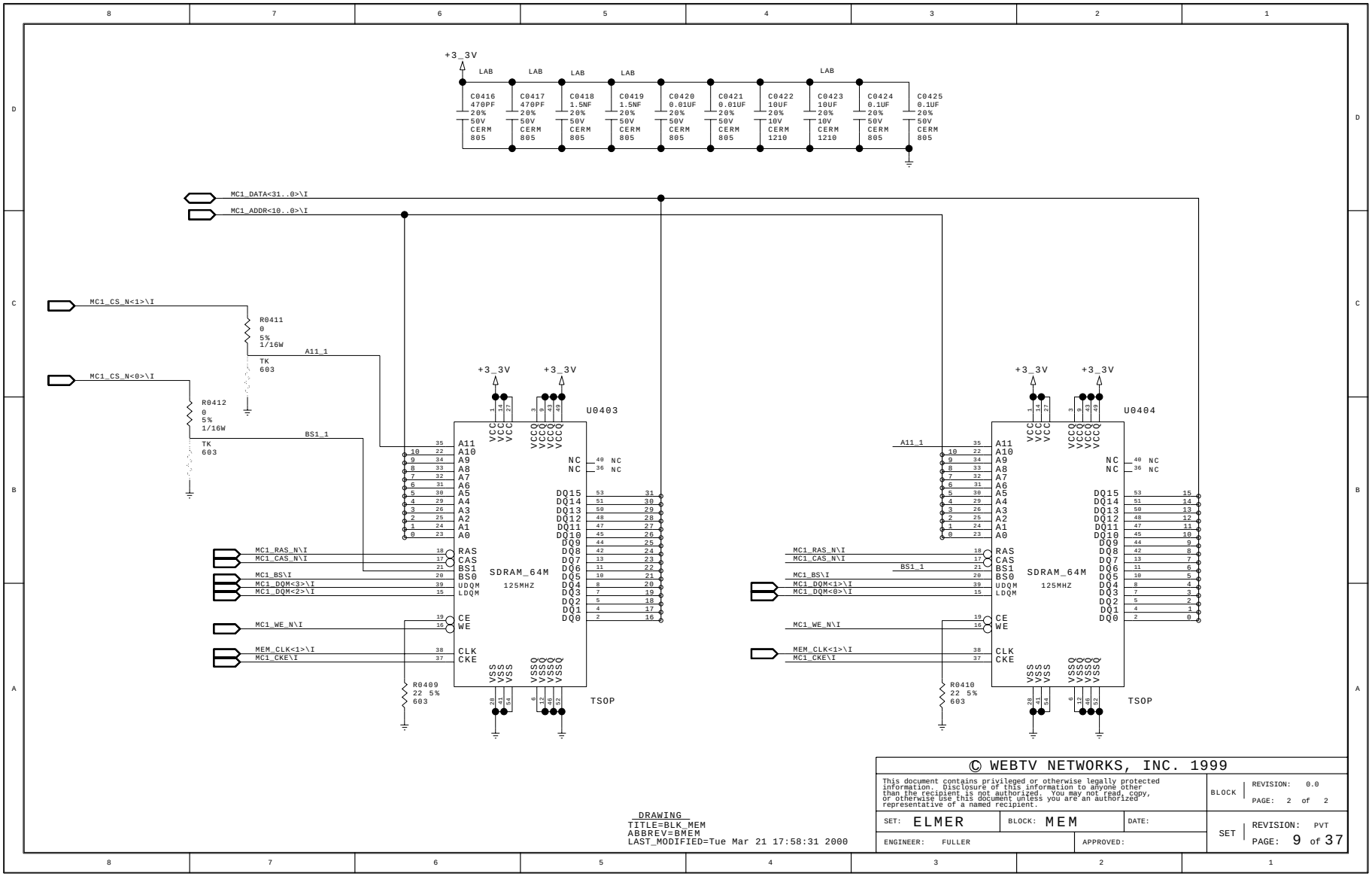
DRAWING
TITLE=BLK_MEM
ABBREV=BMEM
LAST_MODIFIED=Tue Mar 21 17:58:02 2000

SET: ELMER	BLOCK: MEM	DATE:	BLOCK | REVISION: 0.0 PAGE: 1 of 2
ENGINEER: FULLER		APPROVED:	SET | REVISION: PVT PAGE: 8 of 37



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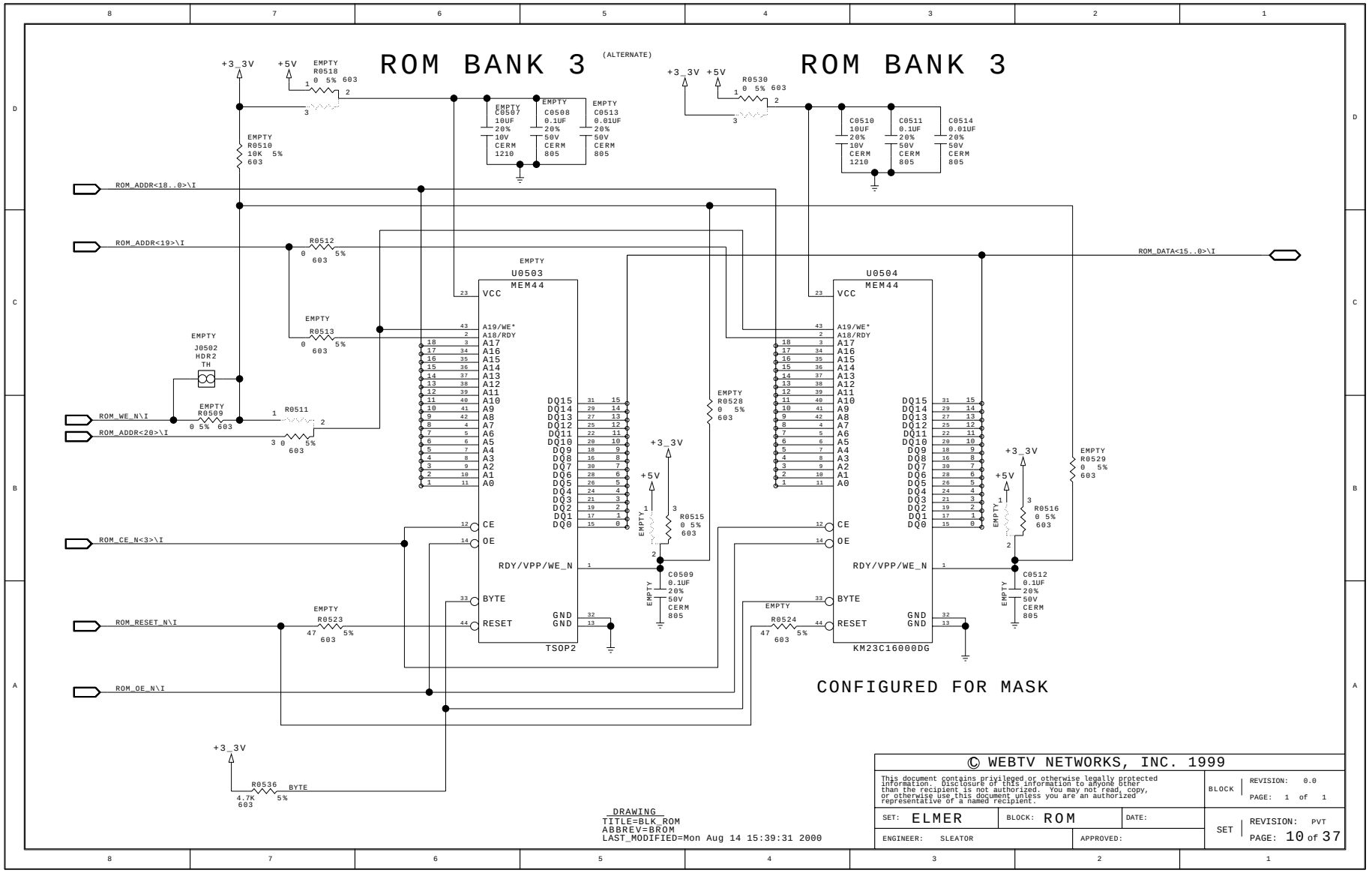
DRAWING
TITLE=BLK_MEM
ABBREV=BMEM
LAST_MODIFIED=Tue Mar 21 17:58:31 2000

SET: ELMER	BLOCK: MEM	DATE:	BLOCK REVISION: 0.0 PAGE: 2 of 2
ENGINEER: FULLER	APPROVED:		SET REVISION: PVT PAGE: 9 of 37



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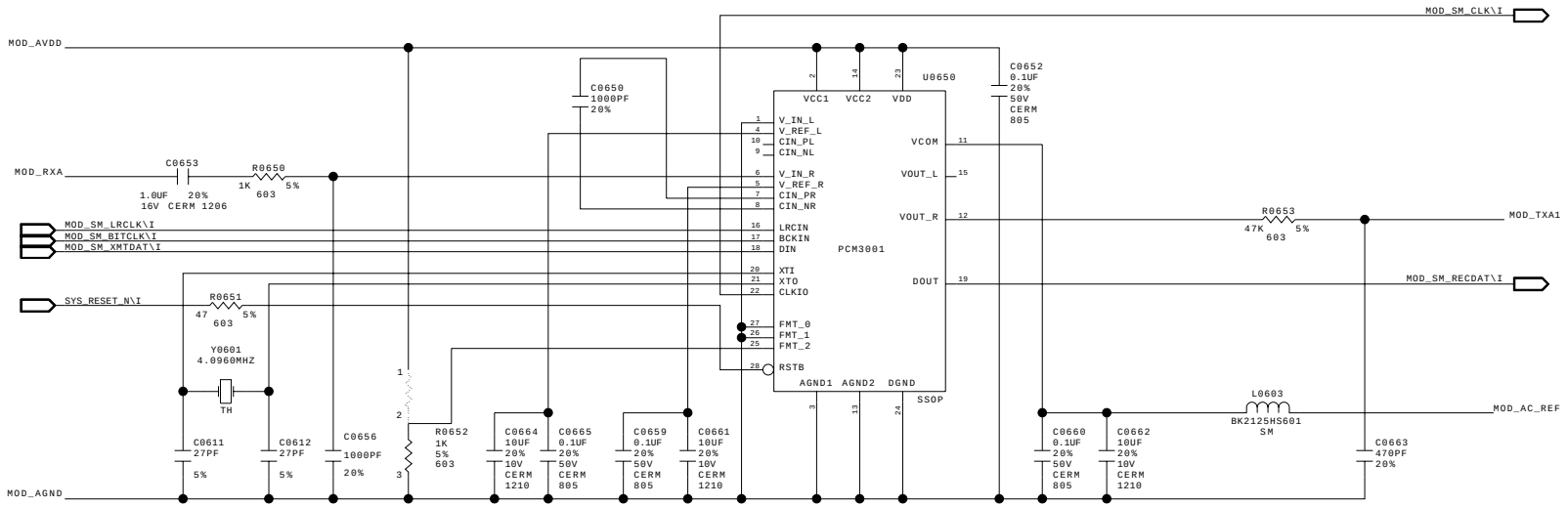
DRAWING
TITLE=BLK_ROM
ABBREV=BROM
LAST_MODIFIED=Mon Aug 14 15:39:31 2000

SET: ELMER	BLOCK: ROM	DATE:	
ENGINEER: SLEATOR	APPROVED:		

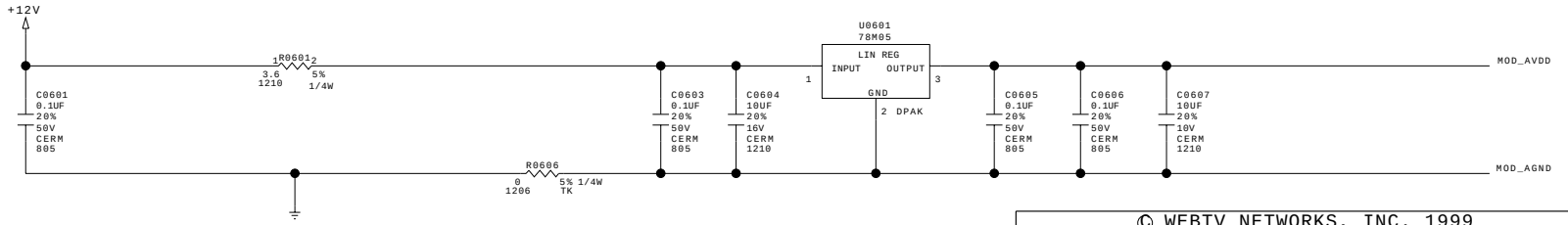
BLOCK | REVISION: 0.0 | PAGE: 1 of 1

SET | REVISION: PVT | PAGE: 10 of 37

SOFT MODEM CODEC



CODEC POWER SUPPLY



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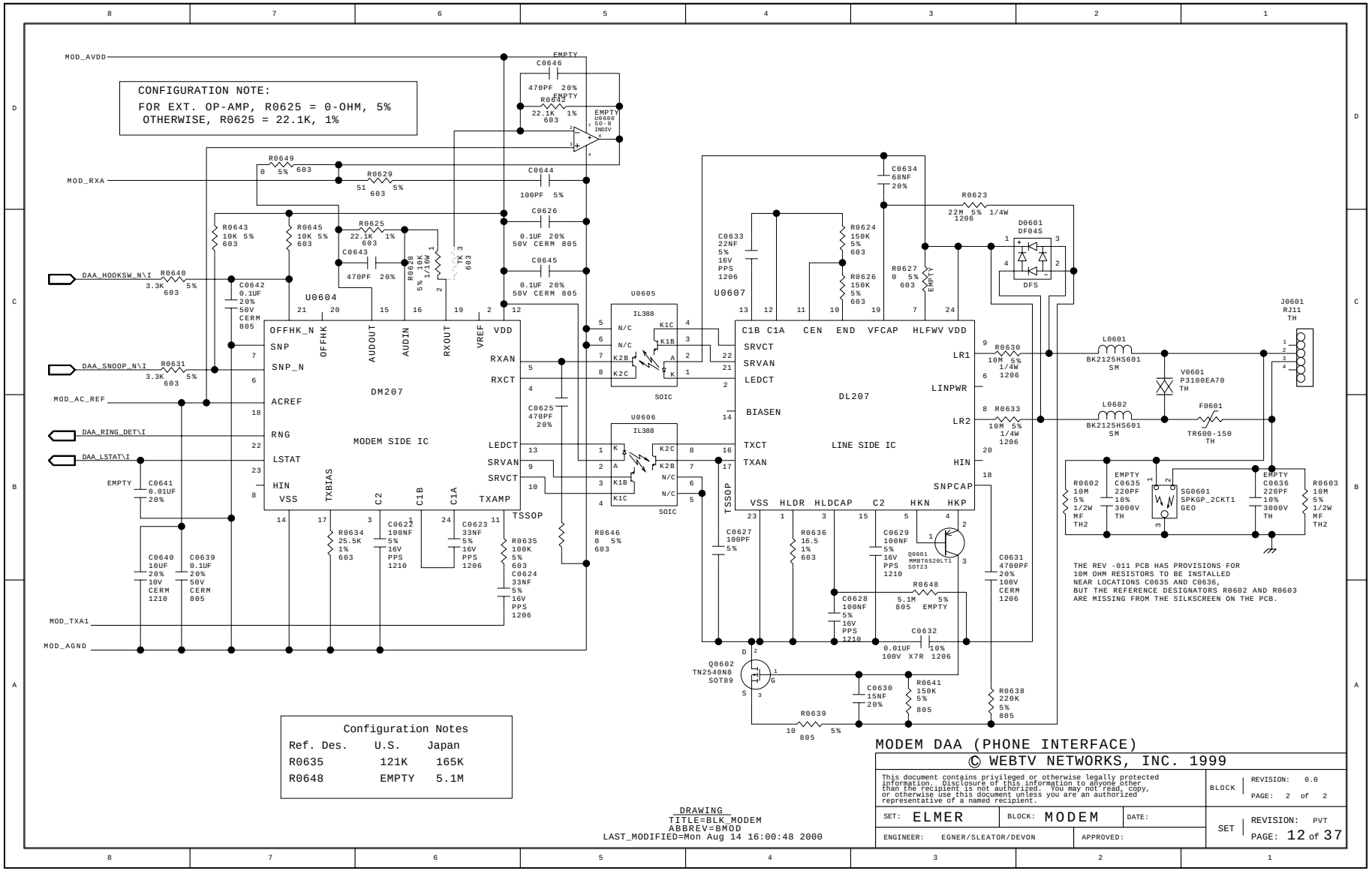
DRAWING
TITLE=BLK_MODEM
ABBREV=BMOD
LAST_MODIFIED=Mon Aug 14 16:04:21 2000

SET: ELMER	BLOCK: MODEM	DATE:	BLOCK REVISION: 0.0 PAGE: 1 of 2
ENGINEER: EGNER/SLEATOR	APPROVED:		SET REVISION: PVT PAGE: 11 of 37



Configuration Notes

Ref. Des.	U.S.	Japan
R0635	121K	165K
R0648	EMPTY	5.1M

DRAWING
TITLE=BLK_MODEM
ABBREV=BMOD
LAST_MODIFIED=Mon Aug 14 16:00:48 2000

MODEM DAA (PHONE INTERFACE)

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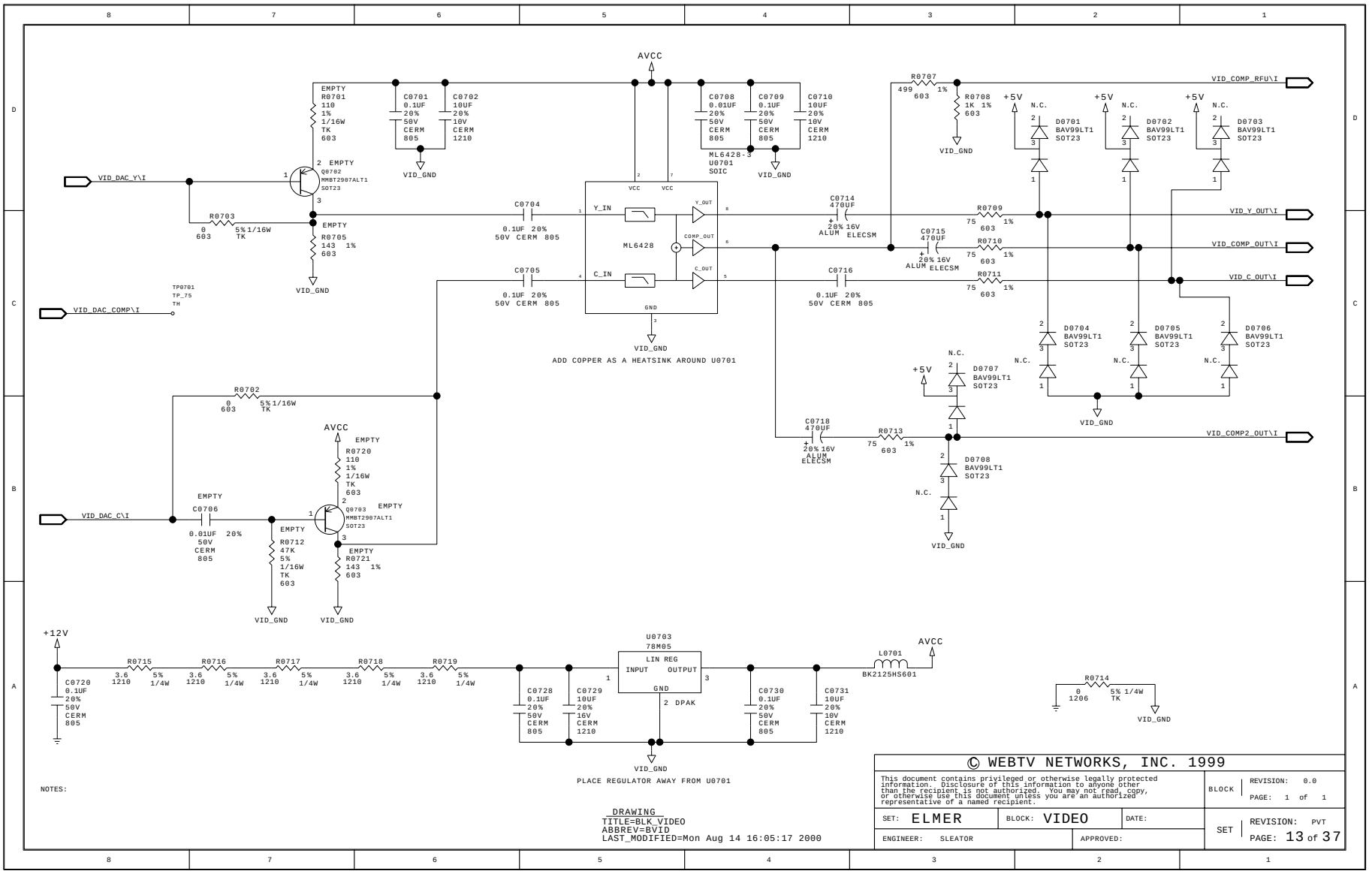
BLOCK | REVISION: 0.0 | PAGE: 2 of 2

SET: ELMER | BLOCK: MODEM | DATE:

ENGINEER: EGNER/SLEATOR/DEVON | APPROVED:

SET | REVISION: PVT | PAGE: 12 of 37



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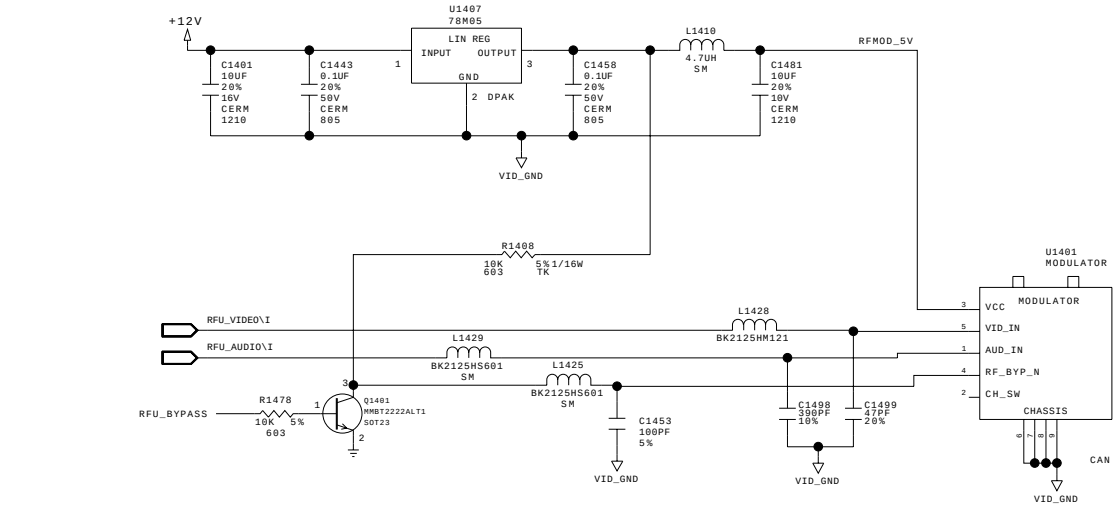
SET: ELMER	BLOCK: VIDEO	DATE:	BLOCK REVISION: 0.0 PAGE: 1 of 1
ENGINEER: SLEATOR	APPROVED:		SET REVISION: PVT PAGE: 13 of 37



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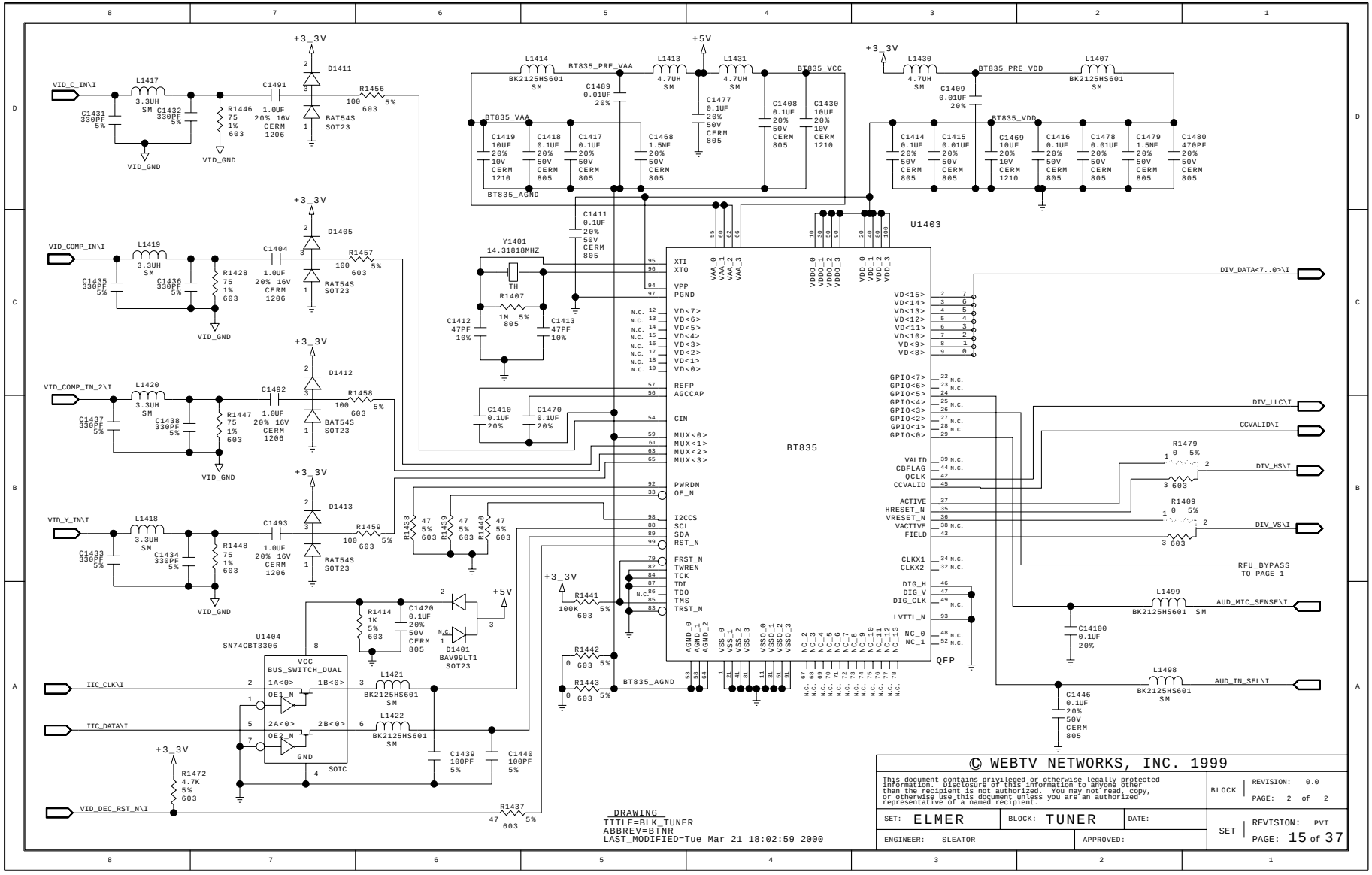
DRAWING
TITLE=BLK_TUNER
ABBREV=BTNR
LAST_MODIFIED=Tue Mar 21 18:02:48 2000

SET: ELMER	BLOCK: TUNER	DATE:	
ENGINEER: SLEATOR/SUZUKI	APPROVED:		

BLOCK | REVISION: 0.0 | PAGE: 1 of 2

SET | REVISION: PVT | PAGE: 14 of 37



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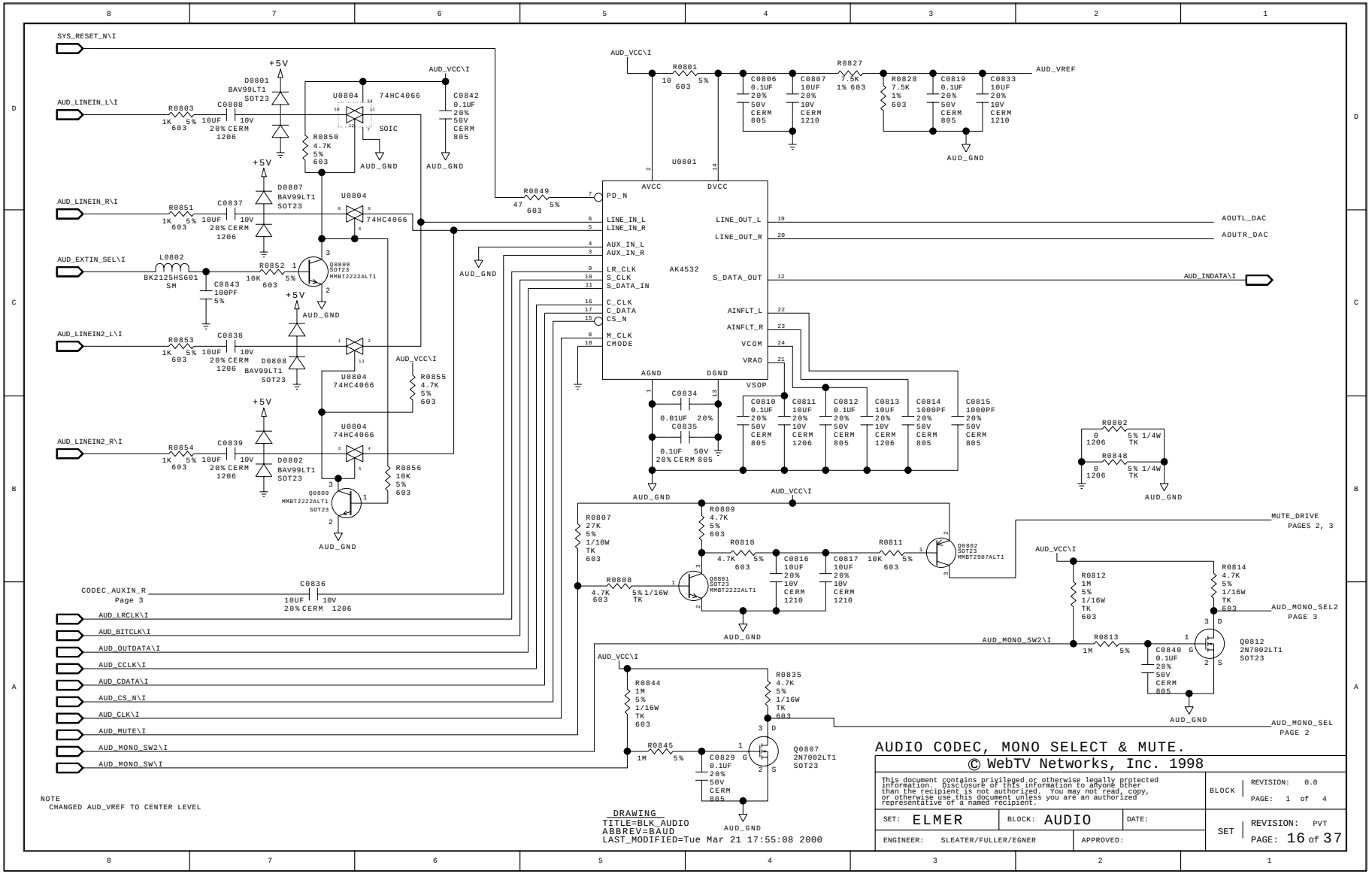
BLOCK	REVISION: 0.0	PAGE: 2 of 2	
SET: ELMER	BLOCK: TUNER	DATE:	
ENGINEER: SLEATOR	APPROVED:	SET	REVISION: PVT
			PAGE: 15 of 37



DRAWING
TITTLE=BLK_AUDIO
ABBREV=BAUD
LAST_MODIFIED=Tue Mar 21 17:55:08 2000

AUDIO CODEC, MONO SELECT & MUTE.

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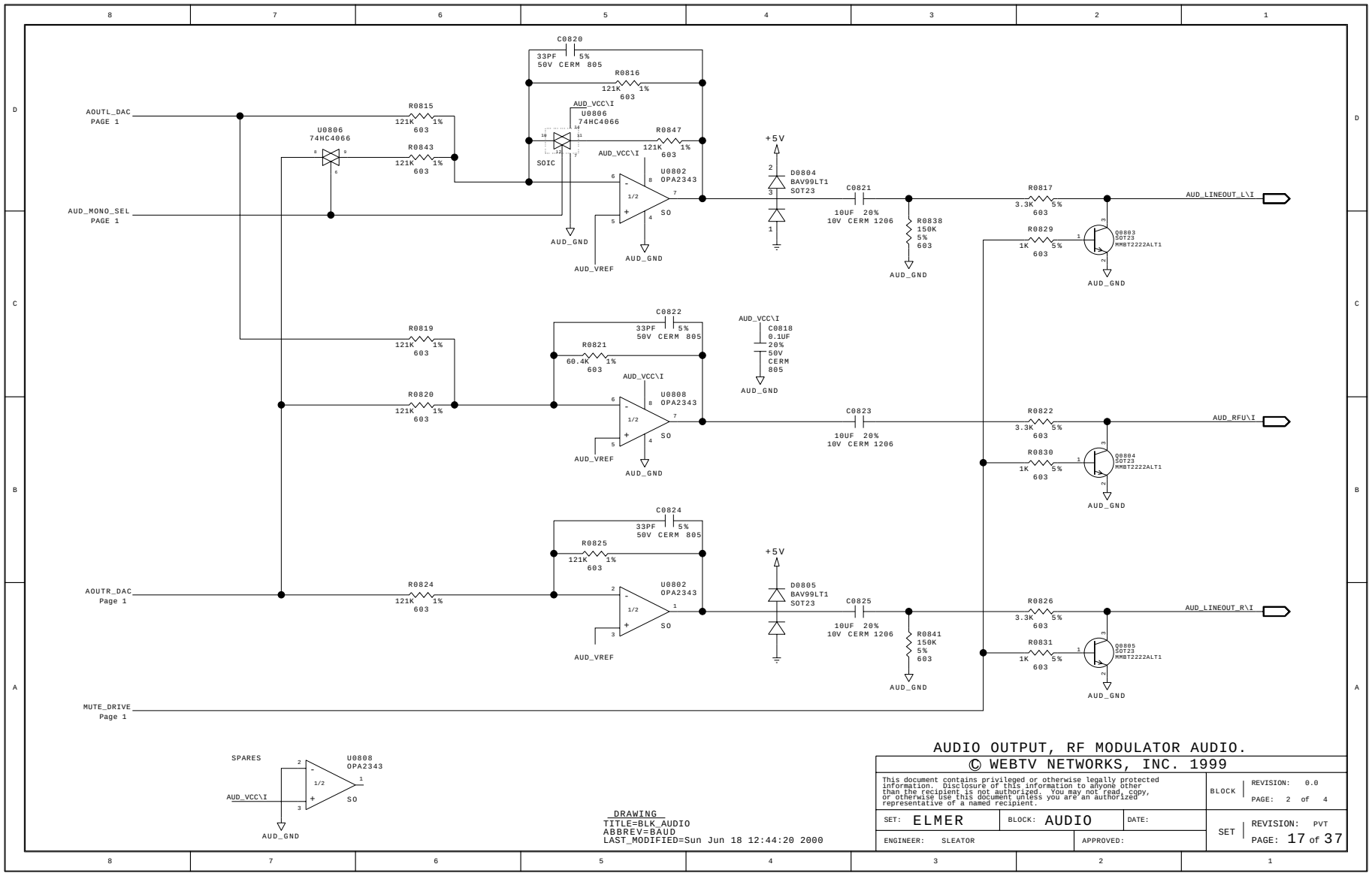
SET: ELMER	BLOCK: AUDIO	DATE:	BLOCK REVISION: 0.0 PAGE: 1 of 4
ENGINEER: SLEATER/FULLER/EGNER	APPROVED:		SET REVISION: PVT PAGE: 16 of 37


C0820
33PF 5%
50V CERM 805
R0816
121K 1%
603
AOUTL_DAC
PAGE 1
R0815
121K 1%
603
U0806
74HC4066
R0843
121K 1%
603
AUD_VCC\I
U0806
74HC4066
SOIC
R0847
121K 1%
603
AUD_MONO_SEL
PAGE 1
U0802
OPA2343
1/2
SO
AUD_GND
AUD_VREF
AUD_GND
+5V
D0804
BAV99LT1
SOT23
C0821
10UF 20%
10V CERM 1206
R0838
150K
5%
603
AUD_GND
R0817
3.3K 5%
603
AUD_LINEOUT_L\I
R0829
1K 5%
603
Q0803
SOT23
MMBT2222ALT1
AUD_GND
C0822
33PF 5%
50V CERM 805
R0821
60.4K 1%
603
AUD_VCC\I
C0818
0.1UF
20%
50V
CERM
805
AUD_GND
R0819
121K 1%
603
R0820
121K 1%
603
AUD_VCC\I
U0808
OPA2343
1/2
SO
AUD_VREF
AUD_GND
C0823
10UF 20%
10V CERM 1206
R0822
3.3K 5%
603
AUD_RFU\I
R0830
1K 5%
603
Q0804
SOT23
MMBT2222ALT1
AUD_GND
C0824
33PF 5%
50V CERM 805
R0825
121K 1%
603
AOUTR_DAC
Page 1
R0824
121K 1%
603
U0802
OPA2343
1/2
SO
AUD_VREF
+5V
D0805
BAV99LT1
SOT23
C0825
10UF 20%
10V CERM 1206
R0841
150K
5%
603
AUD_GND
R0826
3.3K 5%
603
AUD_LINEOUT_R\I
R0831
1K 5%
603
Q0805
SOT23
MMBT2222ALT1
AUD_GND
MUTE_DRIVE
Page 1
SPARES
U0808
OPA2343
1/2
SO
AUD_VCC\I
AUD_GND
DRAWING
TITLE=BLK_AUDIO
ABBREV=BAUD
LAST_MODIFIED=Sun Jun 18 12:44:20 2000
AUDIO OUTPUT, RF MODULATOR AUDIO.
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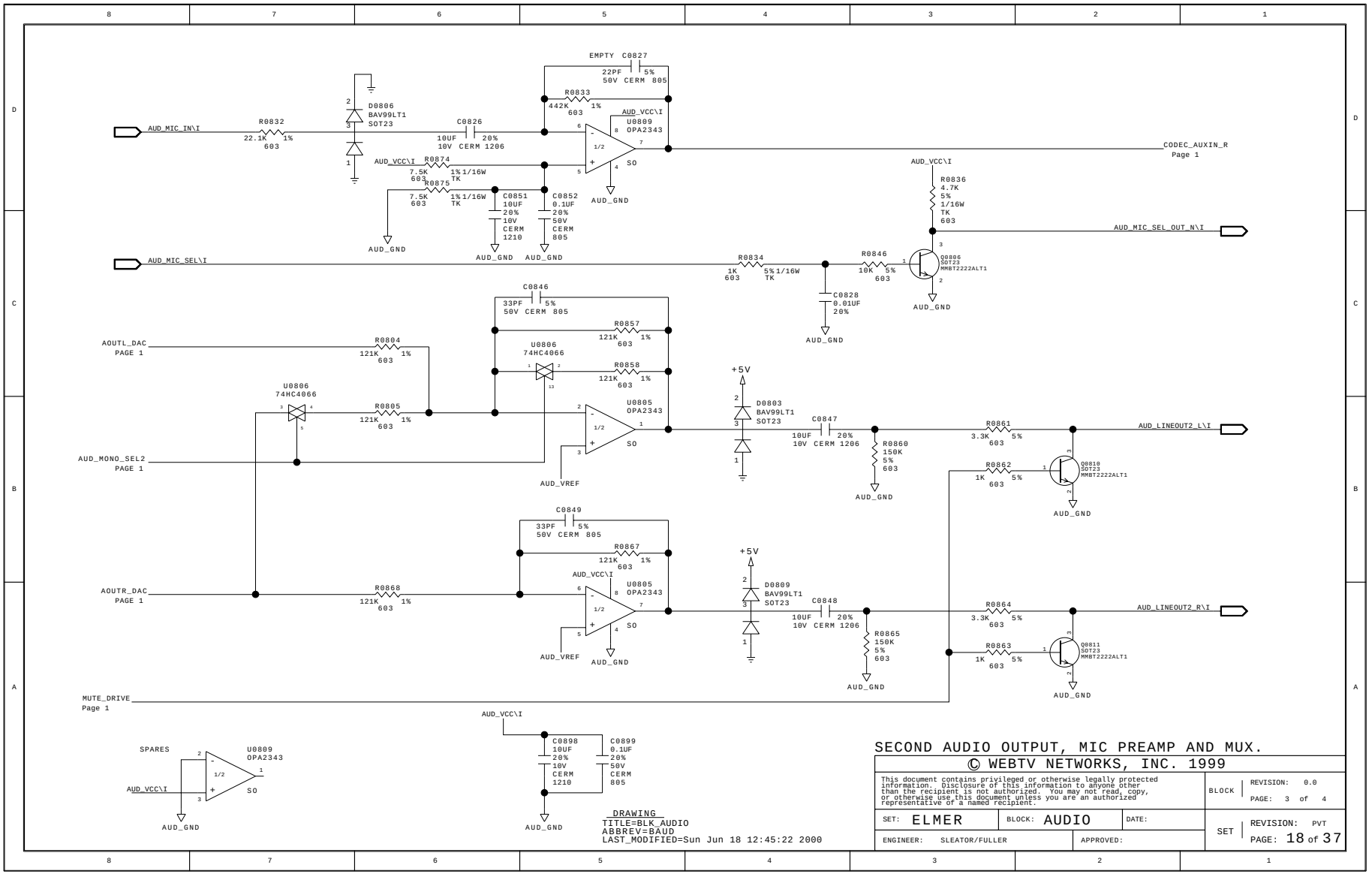
BLOCK
REVISION: 0.0
PAGE: 2 of 4
SET: ELMER
BLOCK: AUDIO
DATE:
ENGINEER: SLEATOR
APPROVED:
SET
REVISION: PVT
PAGE: 17 of 37



DRAWING
TITLE=BLK_AUDIO
ABBREV=BAUD
LAST_MODIFIED=Sun Jun 18 12:45:22 2000

SECOND AUDIO OUTPUT, MIC PREAMP AND MUX.

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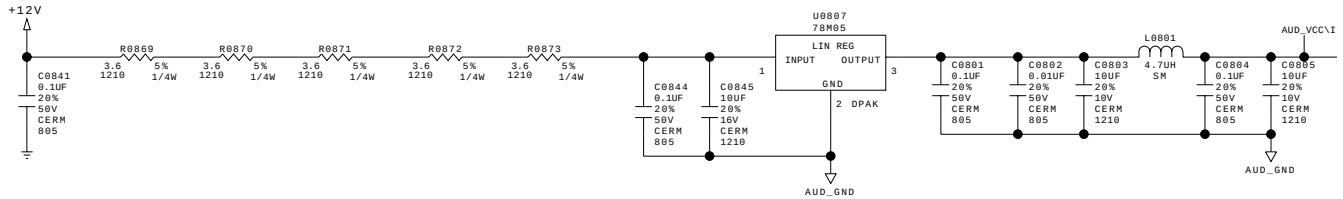
ENGINEER: SLEATOR/FULLER	APPROVED:			PAGE: 3 of 4
			SET	REVISION: PVT
				PAGE: 18 of 37



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ABBREV=BAUD
LAST_MODIFIED=Mon Aug 14 16:06:17 2000

AUDIO OUTPUT, RF MODULATOR AUDIO.

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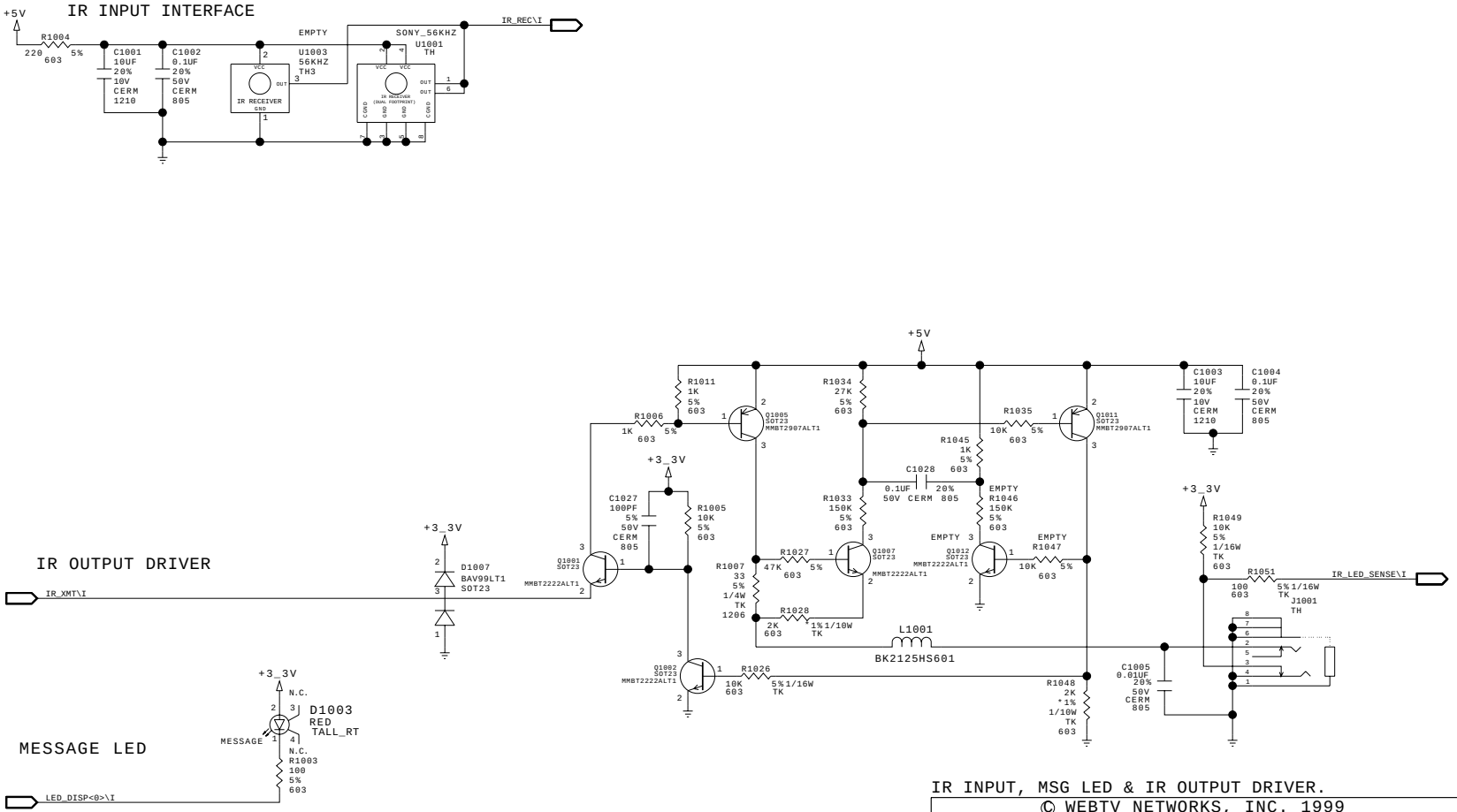
SET: ELMER	BLOCK: AUDIO	DATE:	BLOCK REVISION: 0.0 PAGE: 4 of 4
ENGINEER: SLEATOR	APPROVED:		SET REVISION: PVT PAGE: 19 of 37



* - 5% IS SUFFICIENT

DRAWING
TITLE=BLK_MISC_IO
ABBREV=BMISIO
LAST_MODIFIED=Wed Jul 19 16:48:45 2000

IR INPUT, MSG LED & IR OUTPUT DRIVER.

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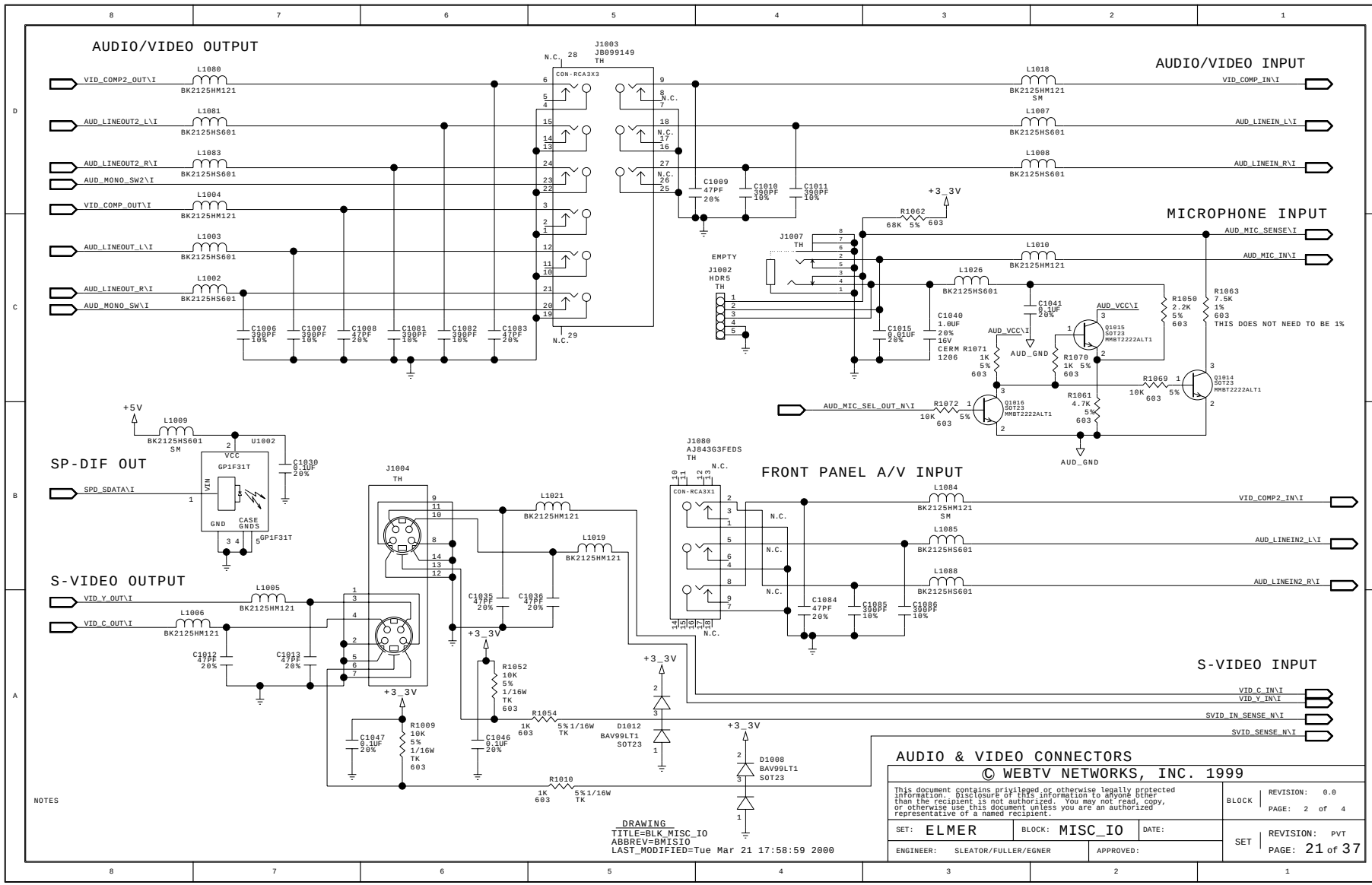
SET: ELMER	BLOCK: MISC_IO	DATE:	BLOCK REVISION: 0.0 PAGE: 1 of 4
ENGINEER: SLEATOR/FULLER	APPROVED:		SET REVISION: PVT PAGE: 20 of 37


AUDIO/VIDEO OUTPUT
AUDIO/VIDEO INPUT
MICROPHONE INPUT
SP-DIF OUT
S-VIDEO OUTPUT
FRONT PANEL A/V INPUT
S-VIDEO INPUT
VID_COMP2_OUT\I
AUD_LINEOUT2_L\I
AUD_LINEOUT2_R\I
AUD_MONO_SW2\I
VID_COMP_OUT\I
AUD_LINEOUT_L\I
AUD_LINEOUT_R\I
AUD_MONO_SW\I
VID_COMP_IN\I
AUD_LINEIN_L\I
AUD_LINEIN_R\I
AUD_MIC_SENSE\I
AUD_MIC_IN\I
AUD_MIC_SEL_OUT_N\I
SPD_SDATA\I
VID_Y_OUT\I
VID_C_OUT\I
VID_COMP2_IN\I
AUD_LINEIN2_L\I
AUD_LINEIN2_R\I
VID_C_IN\I
VID_Y_IN\I
SVID_IN_SENSE_N\I
SVID_SENSE_N\I
+3_3V
+5V
AUD_VCC\I
AUD_GND
J1003 JB099149 TH
J1004 TH
J1007 TH
J1002 HDR5 TH
J1080 AJ843G3FEDS TH
U1002 GP1F31T
D1008 BAV99LT1 SOT23
D1012 BAV99LT1 SOT23
Q1015 SOT23 MMBT2222ALT1
Q1014 SOT23 MMBT2222ALT1
Q1016 SOT23 MMBT2222ALT1
THIS DOES NOT NEED TO BE 1%
NOTES
AUDIO & VIDEO CONNECTORS
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BLOCK REVISION: 0.0
PAGE: 2 of 4
SET: ELMER
BLOCK: MISC_IO
DATE:
ENGINEER: SLEATOR/FULLER/EGNER
APPROVED:
SET REVISION: PVT
PAGE: 21 of 37
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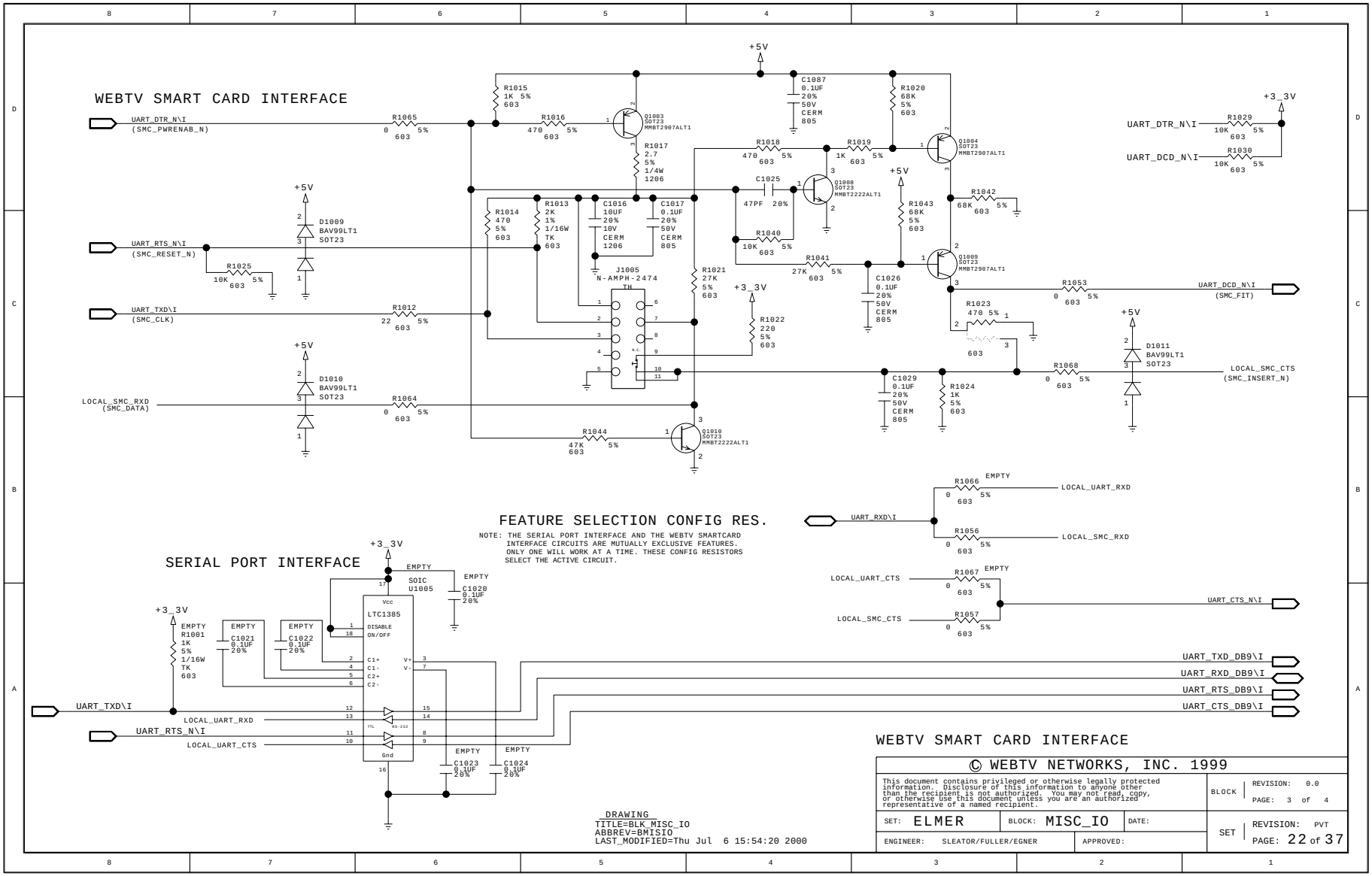
ABBREV=BMISIO
LAST_MODIFIED=Tue Mar 21 17:58:59 2000


WEBTV SMART CARD INTERFACE
UART_DTR_N\I (SMC_PWRENAB_N)
UART_RTS_N\I (SMC_RESET_N)
UART_TXD\I (SMC_CLK)
LOCAL_SMC_RXD (SMC_DATA)
UART_DTR_N\I
UART_DCD_N\I
UART_DCD_N\I (SMC_FIT)
LOCAL_SMC_CTS (SMC_INSERT_N)
+5V
+3_3V
D1009 BAV99LT1 SOT23
D1010 BAV99LT1 SOT23
D1011 BAV99LT1 SOT23
J1005 N-AMPH-2474 TH
FEATURE SELECTION CONFIG RES.
NOTE: THE SERIAL PORT INTERFACE AND THE WEBTV SMARTCARD INTERFACE CIRCUITS ARE MUTUALLY EXCLUSIVE FEATURES. ONLY ONE WILL WORK AT A TIME. THESE CONFIG RESISTORS SELECT THE ACTIVE CIRCUIT.
UART_RXD\I
LOCAL_UART_RXD
LOCAL_SMC_RXD
LOCAL_UART_CTS
LOCAL_SMC_CTS
UART_CTS_N\I
SERIAL PORT INTERFACE
SOIC U1005
LTC1385
UART_TXD\I
UART_RTS_N\I
LOCAL_UART_RXD
LOCAL_UART_CTS
UART_TXD_DB9\I
UART_RXD_DB9\I
UART_RTS_DB9\I
UART_CTS_DB9\I
WEBTV SMART CARD INTERFACE
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BLOCK
REVISION: 0.0
PAGE: 3 of 4
SET: ELMER
BLOCK: MISC_IO
DATE:
ENGINEER: SLEATOR/FULLER/EGNER
APPROVED:
SET
REVISION: PVT
PAGE: 22 of 37
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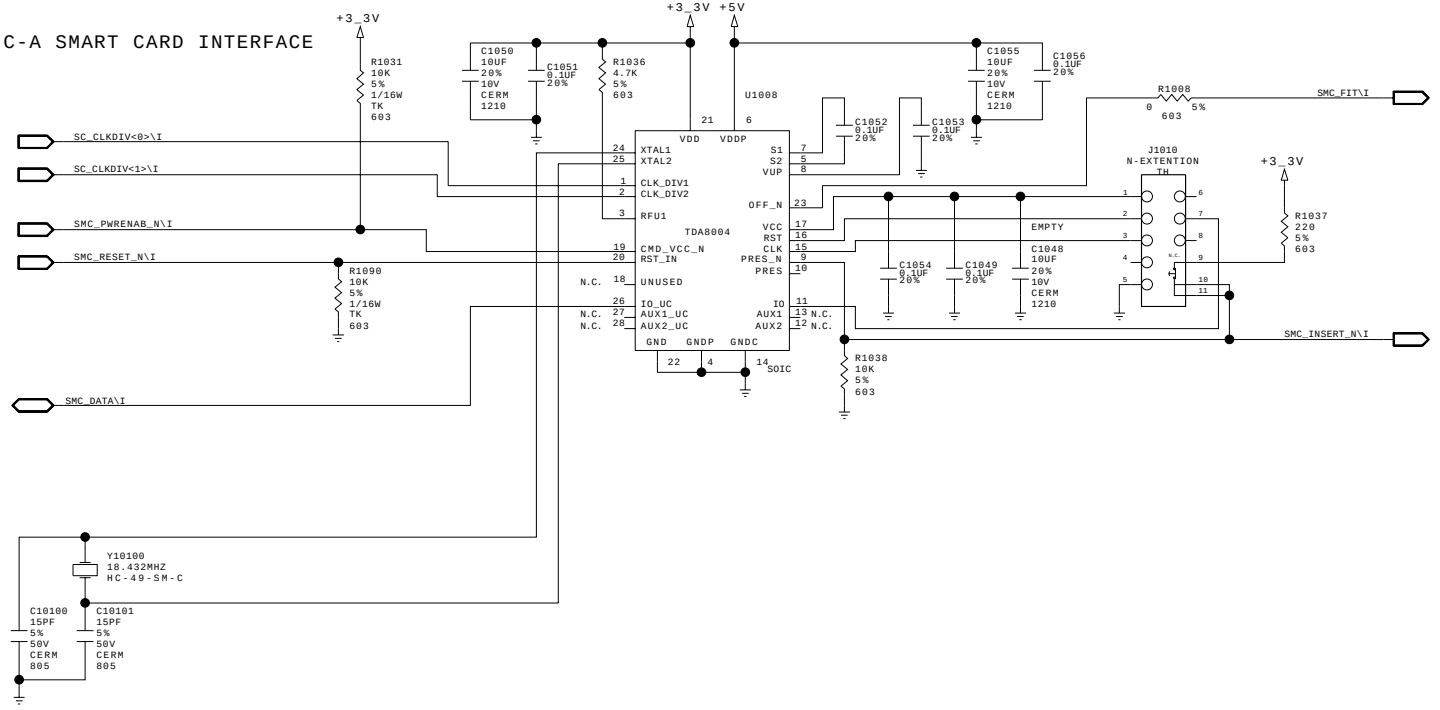
ABBREV=BMISIO
LAST_MODIFIED=Thu Jul 6 15:54:20 2000



C-A SMART CARD INTERFACE

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BLOCK | REVISION: 0.0 PAGE: 4 of 4

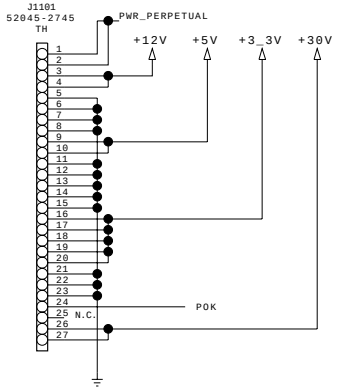
SET: ELMER | BLOCK: MISC_IO | DATE:

ENGINEER: SLEATOR | APPROVED:

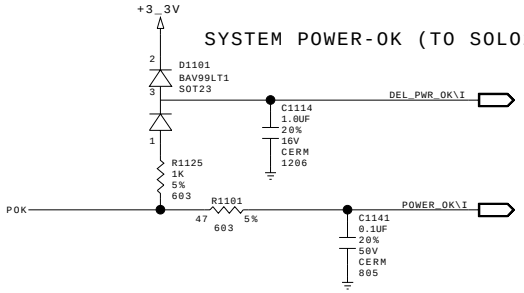
SET | REVISION: PVT PAGE: 23 of 37

DRAWING
TITLE=BLK_MISC_IO
ABBREV=BMISIO
LAST_MODIFIED=Thu May 25 01:00:28 2000

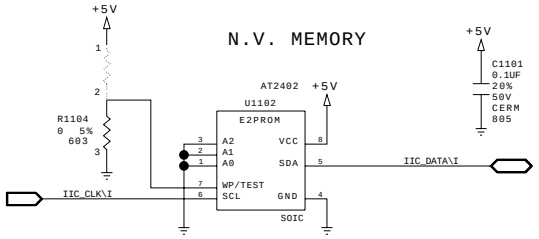
SYSTEM POWER SUPPLY INPUT



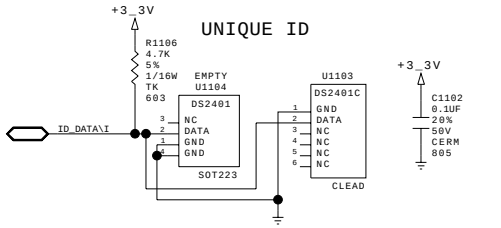
SYSTEM POWER-OK (TO SOLO2)



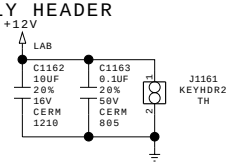
N.V. MEMORY



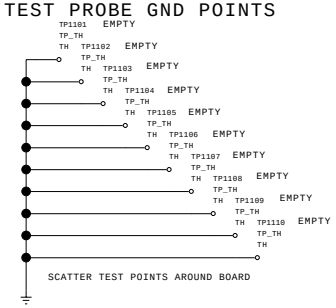
UNIQUE ID



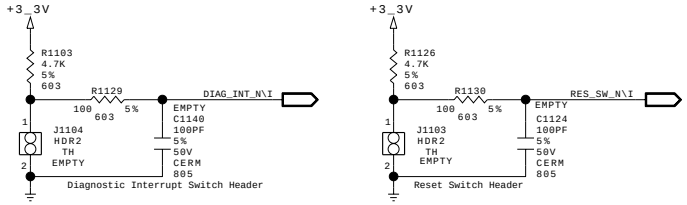
FAN POWER SUPPLY HEADER



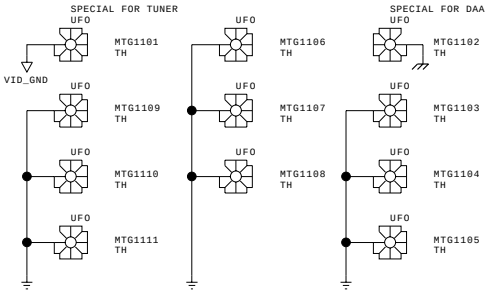
TEST PROBE GND POINTS



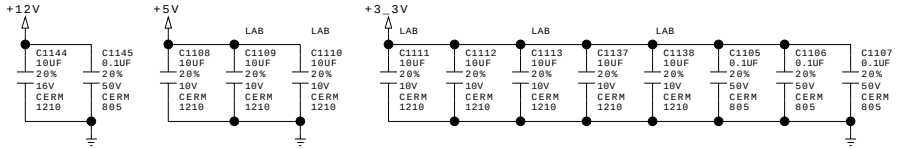
SYSTEM DEBUGGING SWITCH HEADERS



MOUNTING HOLES



BULK BYPASS



MISC CIRCUITRY

DRAWING
TITLE=BLK_MISC
ABBREV=MSC
LAST_MODIFIED=Mon Aug 14 15:20:45 2000

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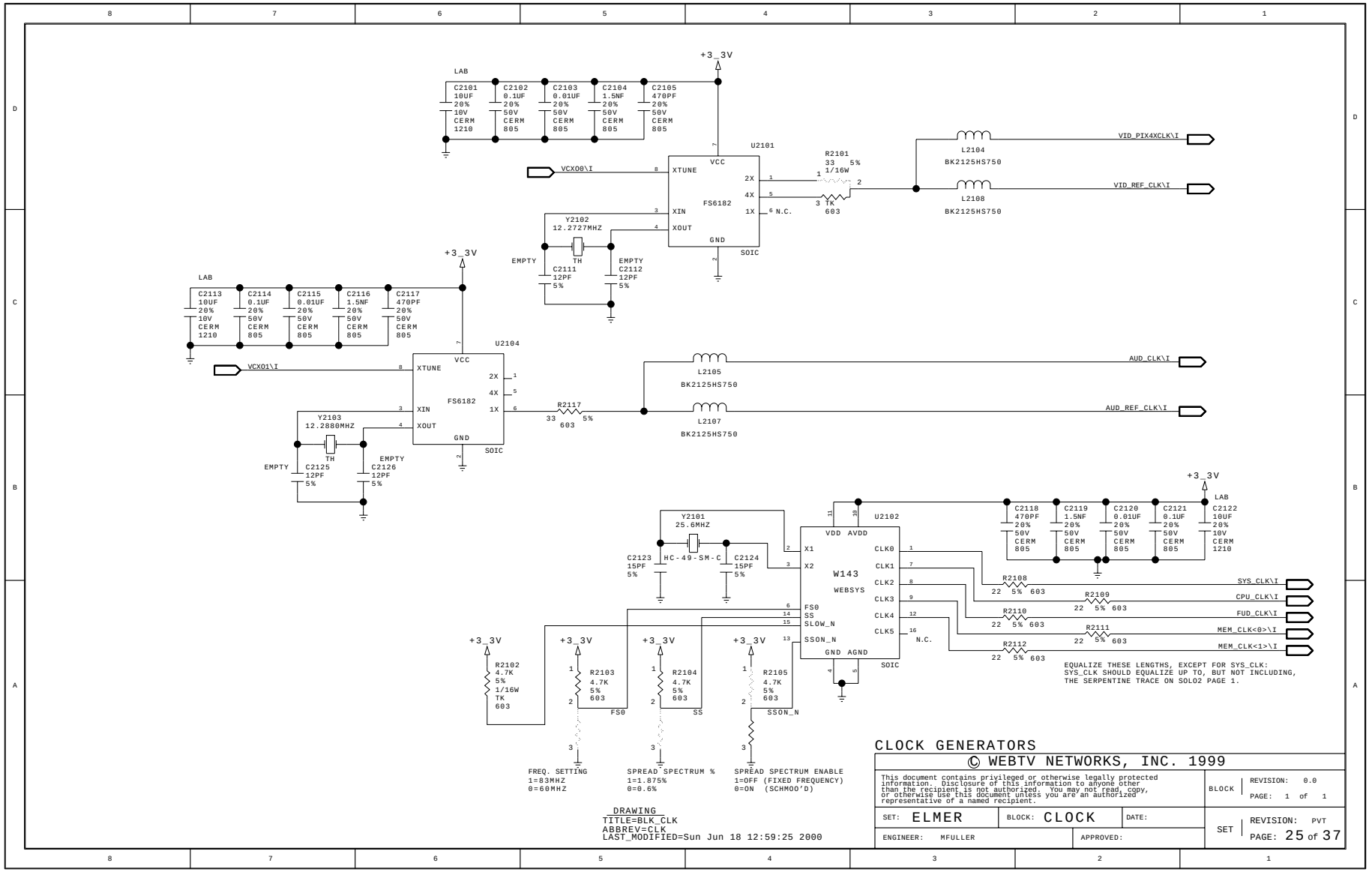
SET: ELMER	BLOCK: MISC	DATE:	BLOCK REVISION: 0.0 PAGE: 1 of 1
ENGINEER: SLEATOR/FULLER/EGNER	APPROVED:		SET REVISION: PVT PAGE: 24 of 37


+3_3V
LAB
C2101 10UF 20% 10V CERM 1210
C2102 0.1UF 20% 50V CERM 805
C2103 0.01UF 20% 50V CERM 805
C2104 1.5NF 20% 50V CERM 805
C2105 470PF 20% 50V CERM 805
U2101
VCC
VCXO0\I
XTUNE
XIN
XOUT
GND
FS6182
SOIC
2X
4X
1X
N.C.
R2101 33 5% 1/16W TK 603
L2104 BK2125HS750
L2108 BK2125HS750
VID_PIX4XCLK\I
VID_REF_CLK\I
Y2102 12.2727MHZ
EMPTY
TH
C2111 12PF 5%
C2112 12PF 5%
C2113 10UF 20% 10V CERM 1210
C2114 0.1UF 20% 50V CERM 805
C2115 0.01UF 20% 50V CERM 805
C2116 1.5NF 20% 50V CERM 805
C2117 470PF 20% 50V CERM 805
U2104
VCXO1\I
Y2103 12.2880MHZ
C2125 12PF 5%
C2126 12PF 5%
R2117 33 5% 603
L2105 BK2125HS750
L2107 BK2125HS750
AUD_CLK\I
AUD_REF_CLK\I
Y2101 25.6MHZ
HC-49-SM-C
C2123 15PF 5%
C2124 15PF 5%
U2102
VDD AVDD
X1
X2
W143
WEBSYS
FS0
SS
SLOW_N
SSON_N
GND AGND
CLK0
CLK1
CLK2
CLK3
CLK4
CLK5
C2118 470PF 20% 50V CERM 805
C2119 1.5NF 20% 50V CERM 805
C2120 0.01UF 20% 50V CERM 805
C2121 0.1UF 20% 50V CERM 805
C2122 10UF 20% 10V CERM 1210
R2108 22 5% 603
R2109 22 5% 603
R2110 22 5% 603
R2111 22 5% 603
R2112 22 5% 603
SYS_CLK\I
CPU_CLK\I
FUD_CLK\I
MEM_CLK<0>\I
MEM_CLK<1>\I
EQUALIZE THESE LENGTHS, EXCEPT FOR SYS_CLK:
SYS_CLK SHOULD EQUALIZE UP TO, BUT NOT INCLUDING,
THE SERPENTINE TRACE ON SOLO2 PAGE 1.
R2102 4.7K 5% 1/16W TK 603
R2103 4.7K 5% 603
R2104 4.7K 5% 603
R2105 4.7K 5% 603
FREQ. SETTING
1=83MHZ
0=60MHZ
SPREAD SPECTRUM %
1=1.875%
0=0.6%
SPREAD SPECTRUM ENABLE
1=OFF (FIXED FREQUENCY)
0=ON (SCHMOO'D)
DRAWING
TITLE=BLK_CLK
ABBREV=CLK
LAST_MODIFIED=Sun Jun 18 12:59:25 2000
CLOCK GENERATORS
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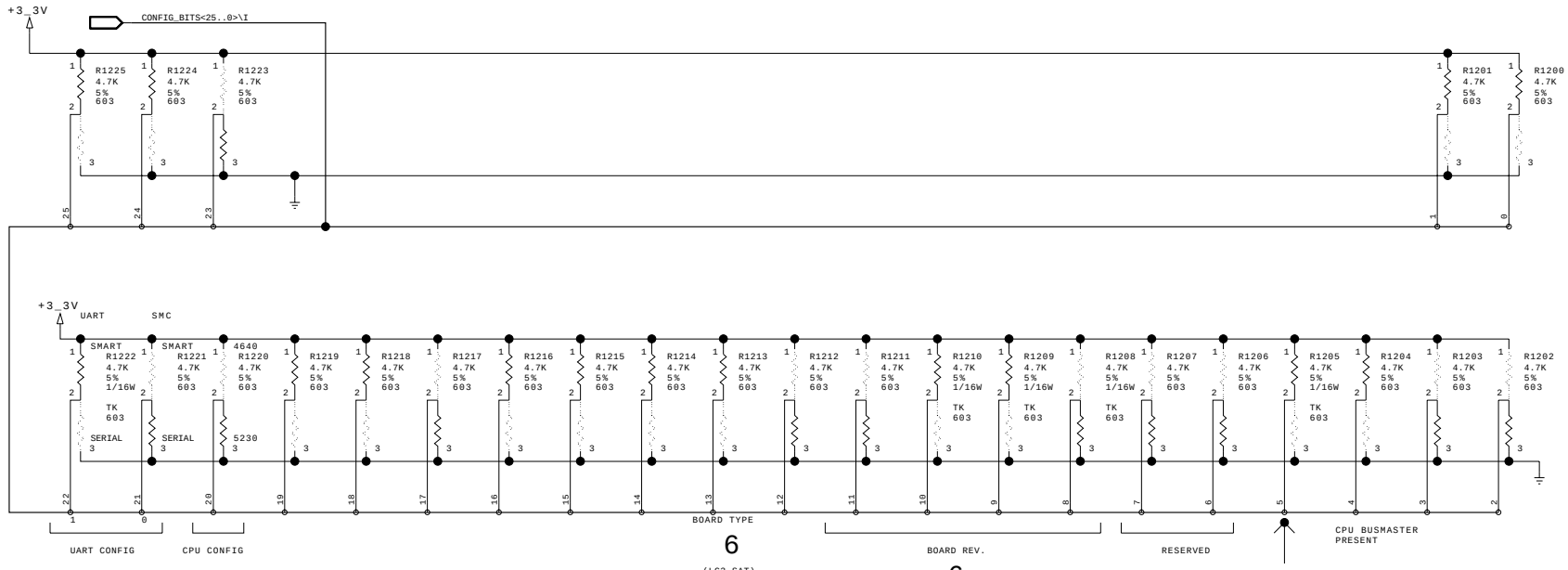
REVISION: 0.0
PAGE: 1 of 1
SET: ELMER
BLOCK: CLOCK
DATE:
ENGINEER: MFULLER
APPROVED:
SET
REVISION: PVT
PAGE: 25 of 37



6

(LC3-SAT)

0 = LC2 (SOLO)
1 = LC3-DEV (SOLO)
2 = 5230-J (SOLO)
3 = LC3-DEV2 (SOLO2)
4 = ...
5 = ...
6 = LC3-SAT

6

(DVT-2.3)

VIDEO INVERSION
R1205 - LOW IS INVERTED
R1205 - HIGH IS NORMAL

RIO_ADDR[23] - USE 1/2 CLOCK MULTIPLIERS FOR CPU
R1223
HI-USE 1/2 CLOCK MULTIPLIERS (2.5X/3.5X)
LO-USE INT CLOCK MULTIPLIERS (2X/3X)

RIO_ADDR[22] - SMART CARD #1 ENABLE.
R1222
HI-ENABLES SMART CARD PORT #1.
LO-DISABLES SMART CARD PORT #1.

RIO_ADDR[21] - SMART CARD #0 ENABLE.
R1221
HI-ENABLES SMART CARD PORT #0.
LO-DISABLES SMART CARD PORT #0.

RIO_ADDR[20] - CPU TYPE.
R1220
HI-WHEN USING AN IDT 4640 CPU.
LO-WHEN USING A QED 5230 CPU.

RIO_ADDR[19] - ENDIANESS.
R1219
HI-SYSTEM RUNS IN BIG ENDIAN MODE.
LO-SYSTEM RUNS IN LITTLE ENDIAN MODE.

RIO_ADDR[18] - SDRAM SPEED.
R1218
HI-CONNECTED BETWEEN 1 AND 2 (PULLED UP) = CAS LATENCY 2
LO-CONNECTED BETWEEN 2 AND 3 (PULLED DOWN) = CAS LATENCY 3

RIO_ADDR[17] - CPU PIPELINE CLOCK SPEED.
R1217
HI-PIPELINE CLOCK = 2X BUS CLOCK.
LO-PIPELINE CLOCK = 3X BUS CLOCK.

RIO_ADDR[16:15] - CPU OUTPUT DRIVER SLEW RATE.
R1216, R1215
UP , UP OUTPUT DRIVERS AT 83%
UP , DOWN OUTPUT DRIVERS AT 100%
DOWN, UP OUTPUT DRIVERS AT 50%
DOWN, DOWN OUTPUT DRIVERS AT 67%

RIO_ADDR[4] - ENHANCED CPU INTERFACE ENABLED (USE WITH EXTERNAL BRIDGE CHIPS)
R1204
HI-ENHANCED MODE ENABLED
LO-ENHANCED MODE DISABLED

RIO_ADDR[3] - VIDEO MODE
R1203
HI-ENABLED PAL MODE
LO-ENABLES NTSC MODE

RIO_ADDR[2] - HARD DISK PRESENT
R1202
HI-NO HARD DISK
LO-HARD DISK PRESENT

RIO_ADDR[0] - ROMS ARE WORD/BYTE WIDTH
R1200
HI-ROMS ARE WORD (16 BIT) WIDTH
LO-ROMS ARE BYTE (8 BIT) WIDTH

Software Bits:

<14..12>	BOARD TYPE
<11..8>	BOARD REVISION
<7..6>	RESERVED
<3>	0 = NTSC; 1 = PAL
<2>	0 = DISK; 1 = FLASH

DRAWING
TITLE=BLK_CFG
ABBREV=BCFG
LAST_MODIFIED=Mon Jun 19 13:05:49 2000

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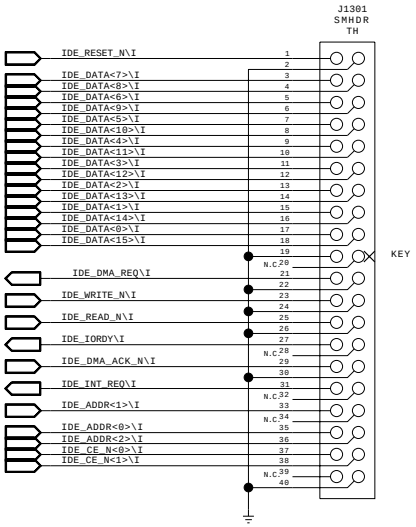
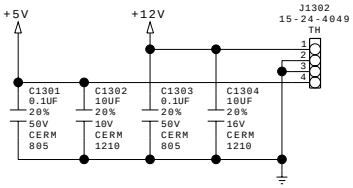
ENGINEER: SLEATOR/FULLER	APPROVED:		SET | REVISION: PVT PAGE: 26 of 37





DRAWING
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ABBREV=BIDE
LAST_MODIFIED=Tue Mar 21 17:57:52 2000

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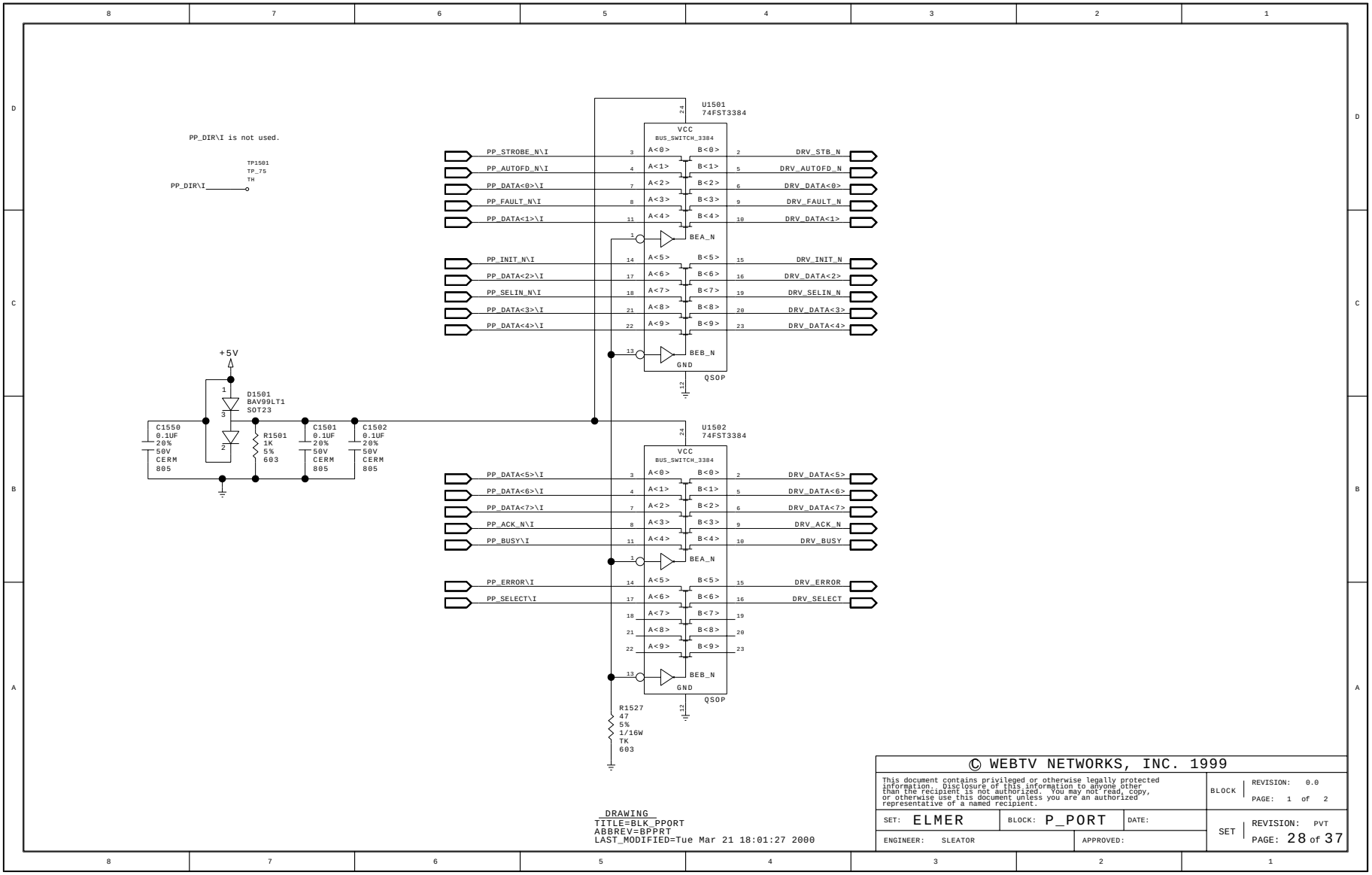
SET: ELMER | BLOCK: IDE | DATE:

ENGINEER: SLEATOR/FULLER | APPROVED:

SET | REVISION: PVT | PAGE: 27 of 37



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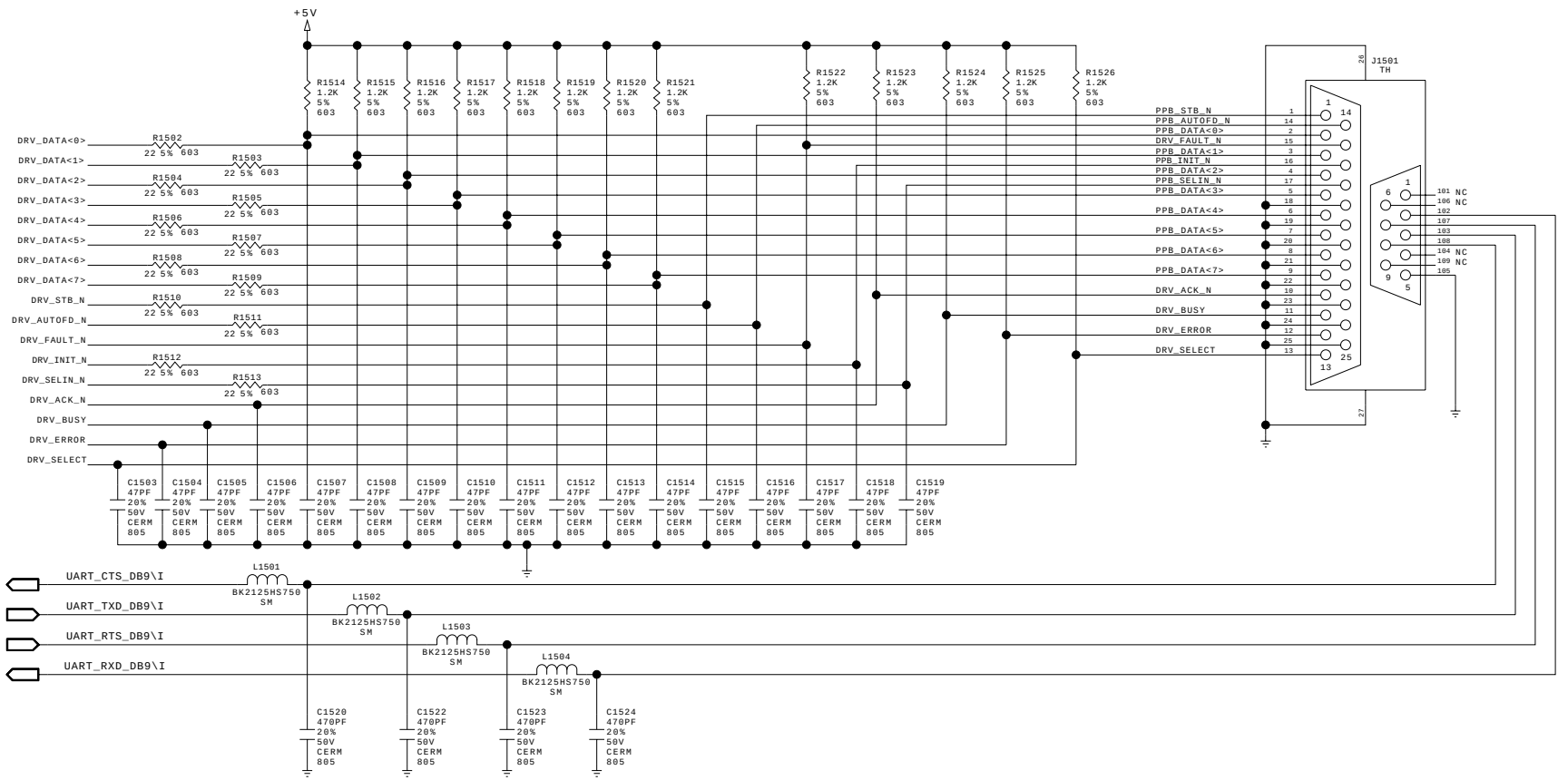
BLOCK REVISION: 0.0 PAGE: 1 of 2

SET REVISION: PVT PAGE: 28 of 37



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LAST_MODIFIED=Tue Mar 21 18:01:36 2000

PARALLEL PORT CONNECTOR

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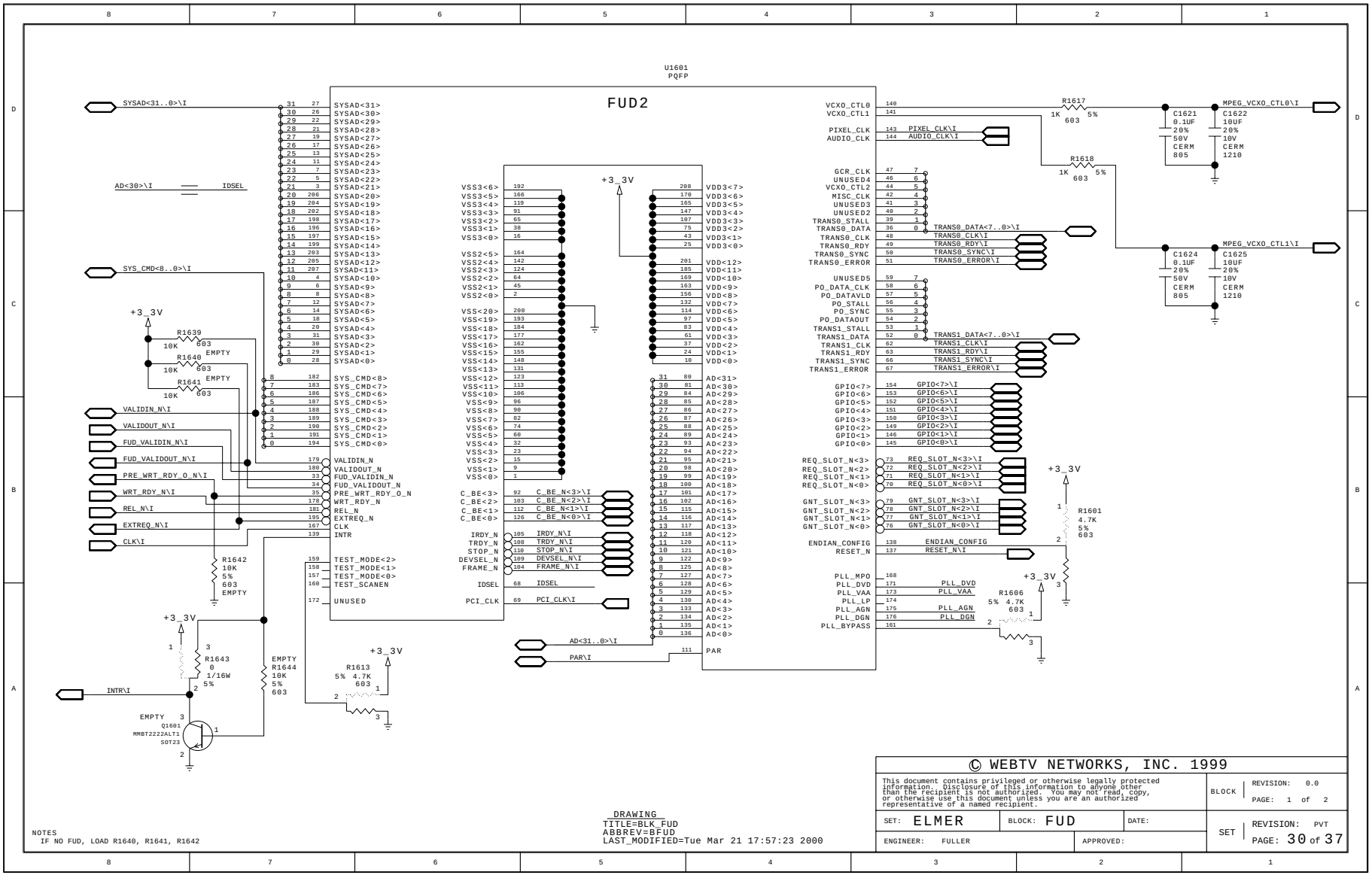
BLOCK | REVISION: 0.0 | PAGE: 2 of 2

SET: ELMER | BLOCK: P_PORT | DATE:

ENGINEER: SLEATOR/FULLER | APPROVED:

SET | REVISION: PVT | PAGE: 29 of 37



NOTES
IF NO FUD, LOAD R1640, R1641, R1642

DRAWING
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ABBREV=BFUD
LAST_MODIFIED=Tue Mar 21 17:57:23 2000

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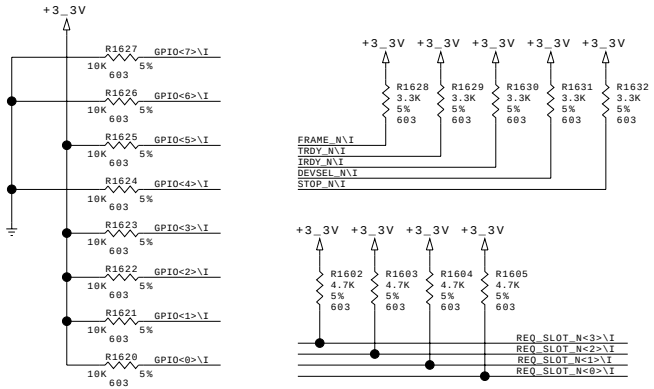
SET: ELMER | BLOCK: FUD | DATE:
ENGINEER: FULLER | APPROVED:

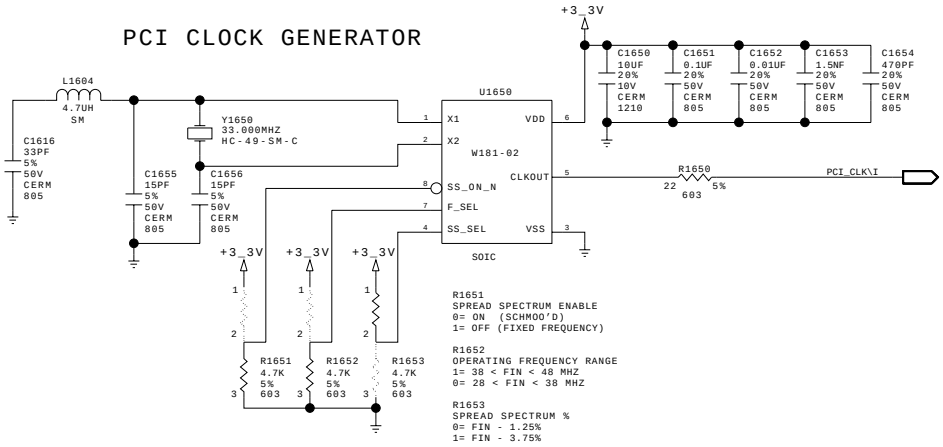
BLOCK REVISION: 0.0 PAGE: 1 of 2

SET REVISION: PVT PAGE: 30 of 37

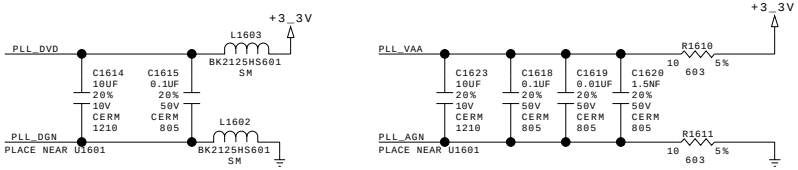
PULL RESISTORS



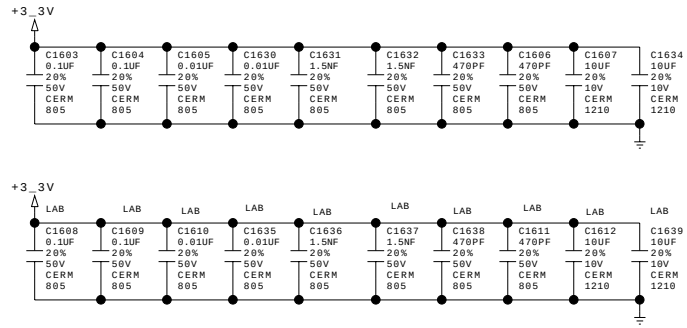
PCI CLOCK GENERATOR



VOLTAGE REFERENCE AND PLL SUPPLIES



BYPASS CAPS



FUD'S FLUFF

NOTES:
GPIO<4> PULLED LOW TO DISABLE BLUE LED ON RESET

DRAWING
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LAST_MODIFIED=Sun Jun 18 13:08:39 2000

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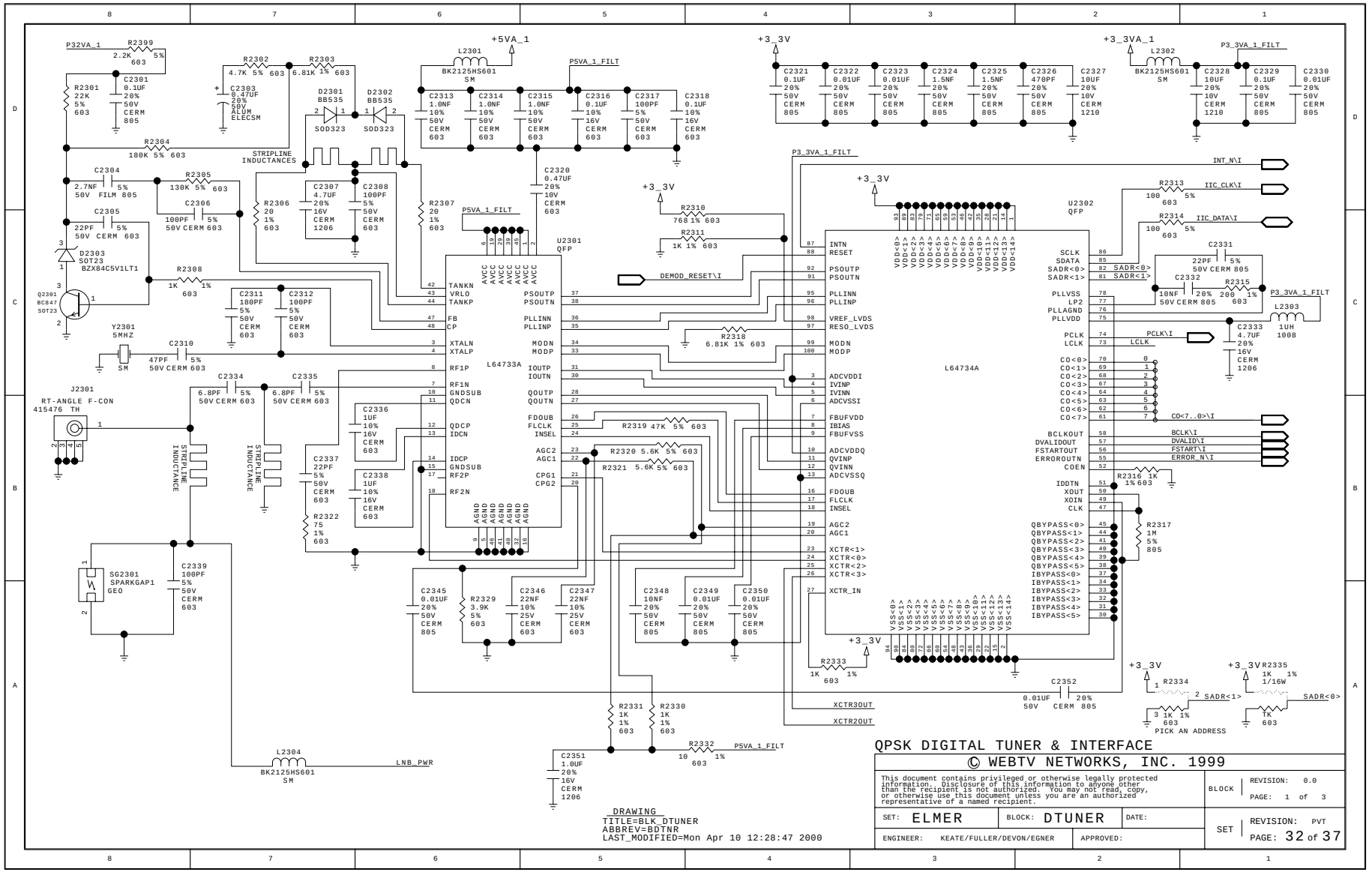
SET: ELMER	BLOCK: FUD	DATE:	BLOCK REVISION: 0.0 PAGE: 2 of 2
ENGINEER: FULLER	APPROVED:		SET REVISION: PVT PAGE: 31 of 37


QPSK DIGITAL TUNER & INTERFACE
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BLOCK REVISION: 0.0
PAGE: 1 of 3
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DATE:
ENGINEER: KEATE/FULLER/DEVON/EGNER
APPROVED:
SET REVISION: PVT
PAGE: 32 of 37
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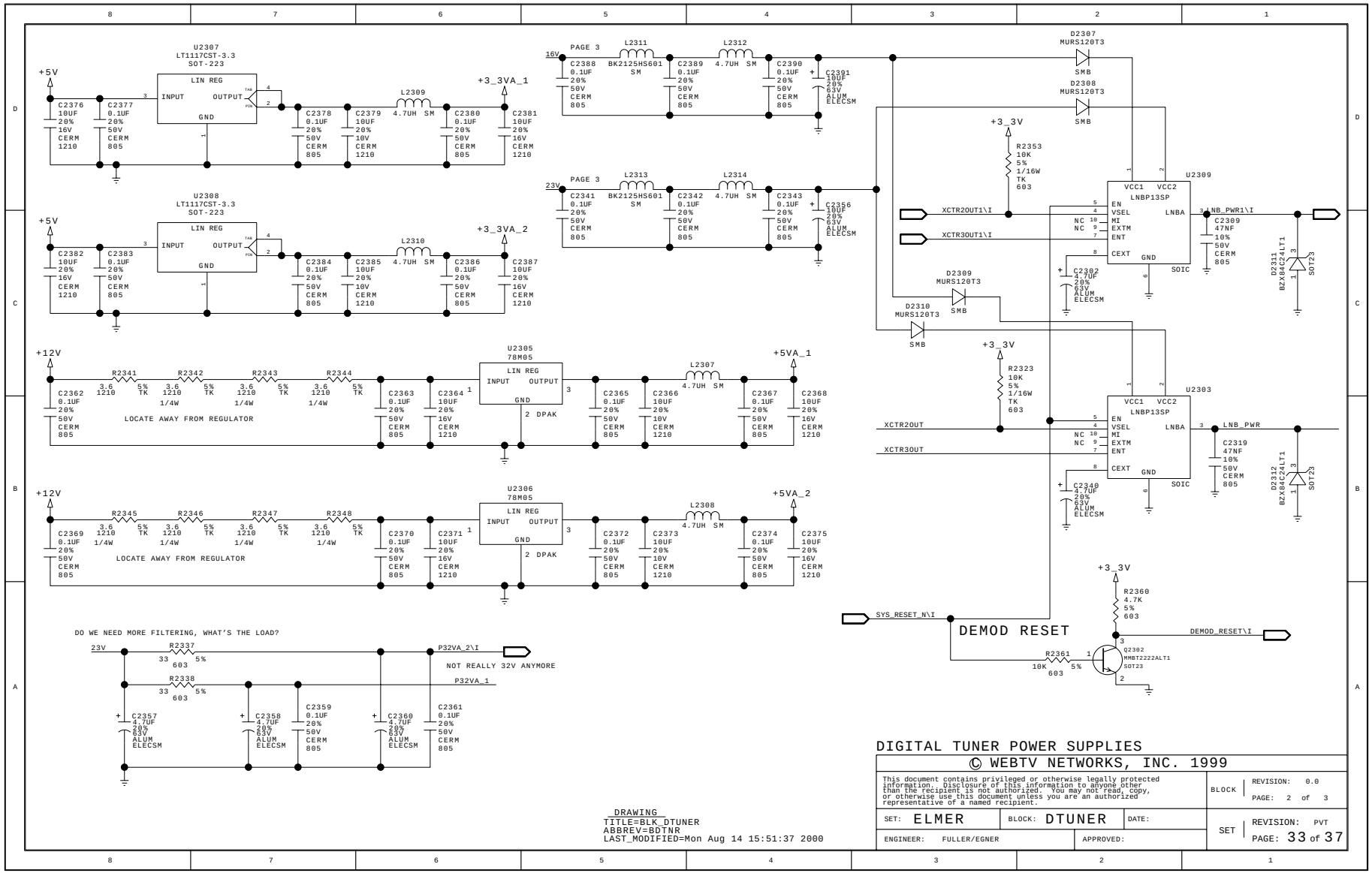
ABBREV=BDTNR
LAST_MODIFIED=Mon Apr 10 12:28:47 2000
L64733A
L64734A
U2301 QFP
U2302 QFP
+5VA_1
+3_3V
+3_3VA_1
P5VA_1_FILT
P3_3VA_1_FILT
STRIPLINE INDUCTANCES
LNB_PWR
PICK AN ADDRESS



DIGITAL TUNER POWER SUPPLIES

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BLOCK | REVISION: 0.0 | PAGE: 2 of 3

SET: ELMER | BLOCK: DTUNER | DATE:

ENGINEER: FULLER/EGNER | APPROVED:

SET | REVISION: PVT | PAGE: 33 of 37

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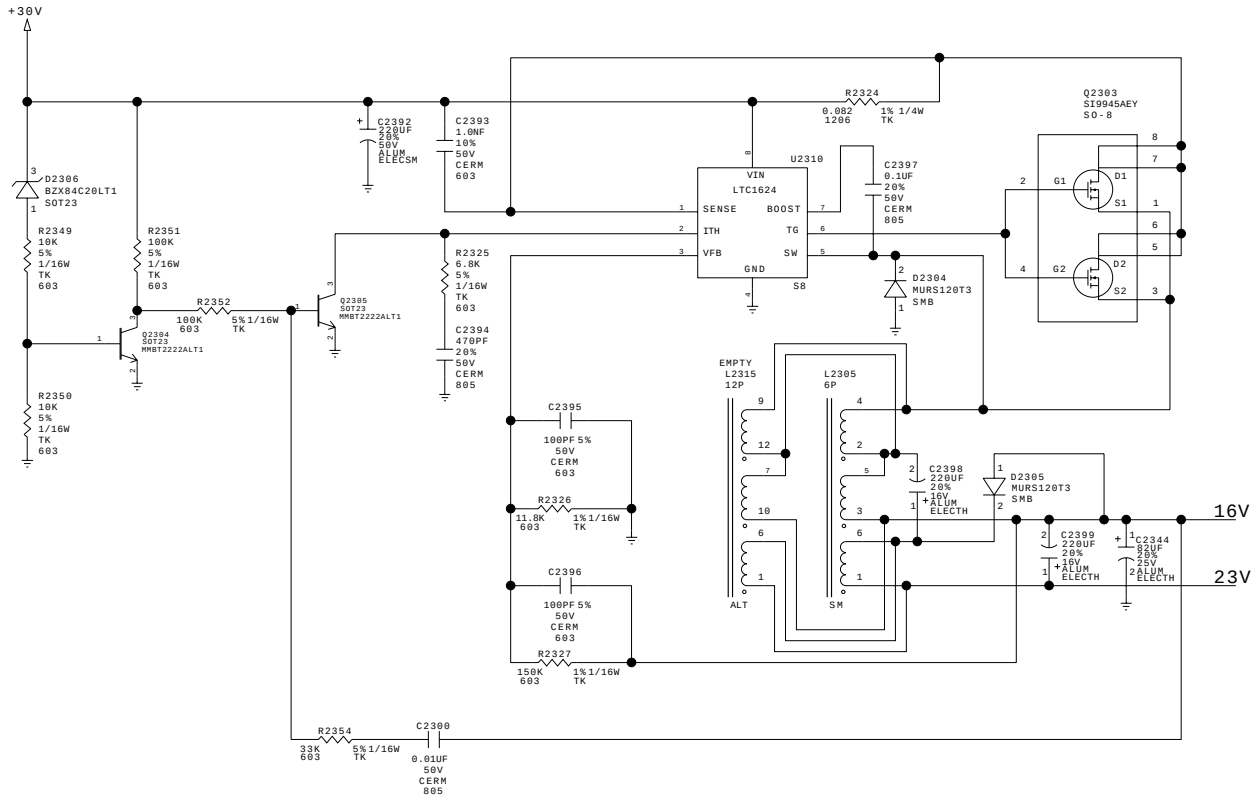

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LAST_MODIFIED=Tue Mar 21 17:57:00 2000

DIGITAL TUNER POWER SUPPLIES

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BLOCK | REVISION: 0.0 | PAGE: 3 of 3

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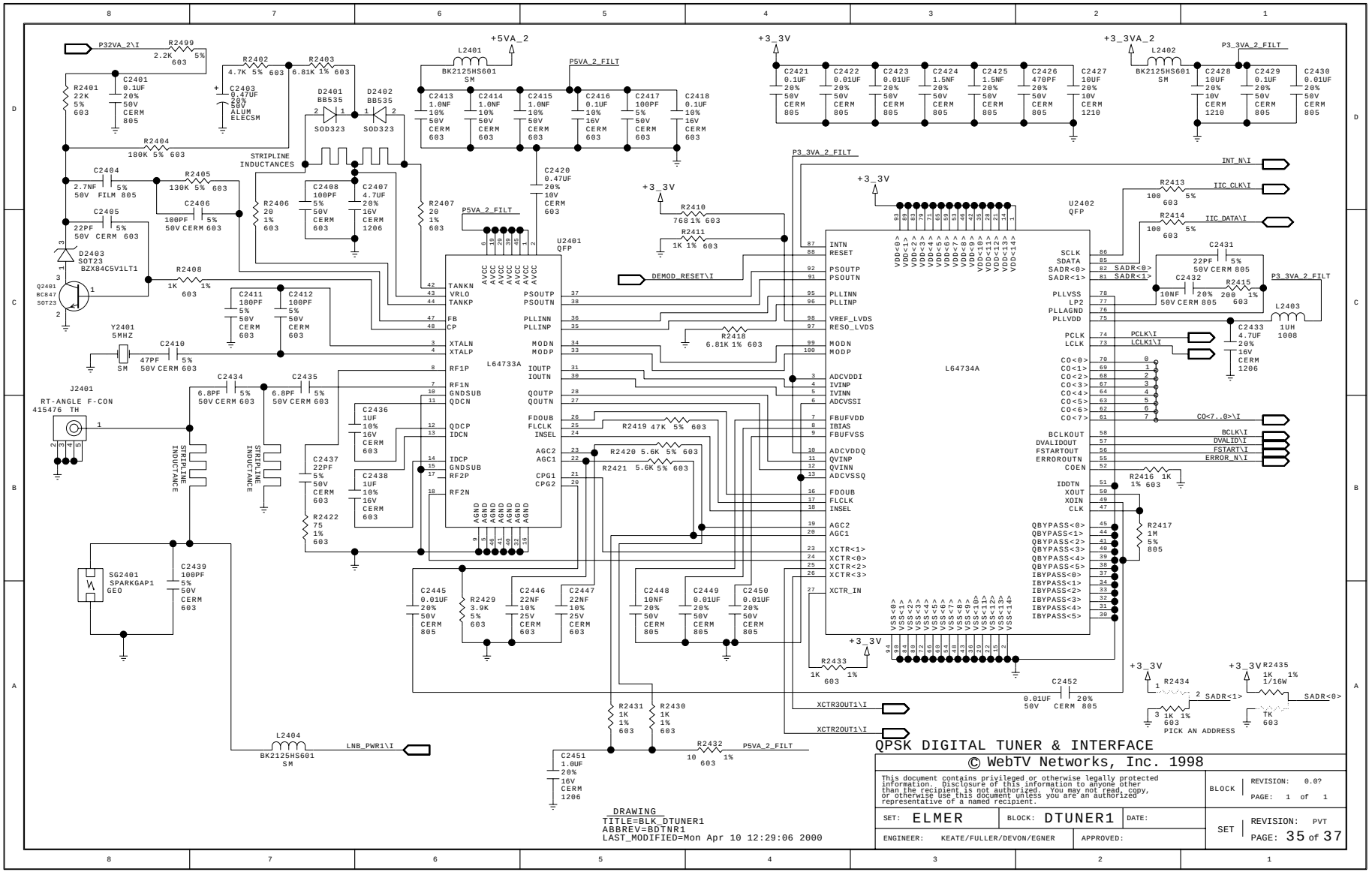
ENGINEER: FULLER/EGNER | APPROVED:

SET | REVISION: PVT | PAGE: 34 of 37



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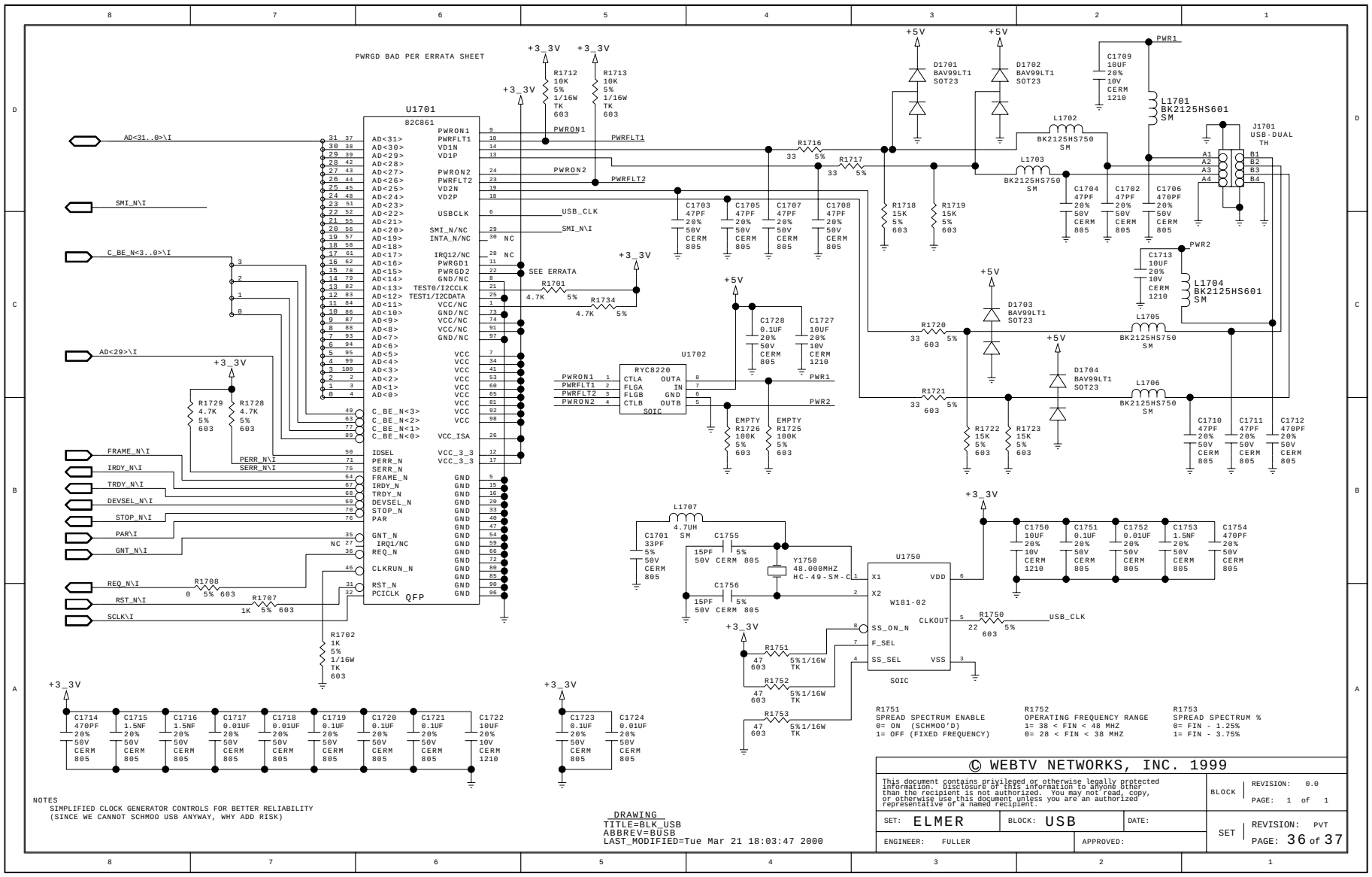
SET | REVISION: PVT PAGE: 35 of 37



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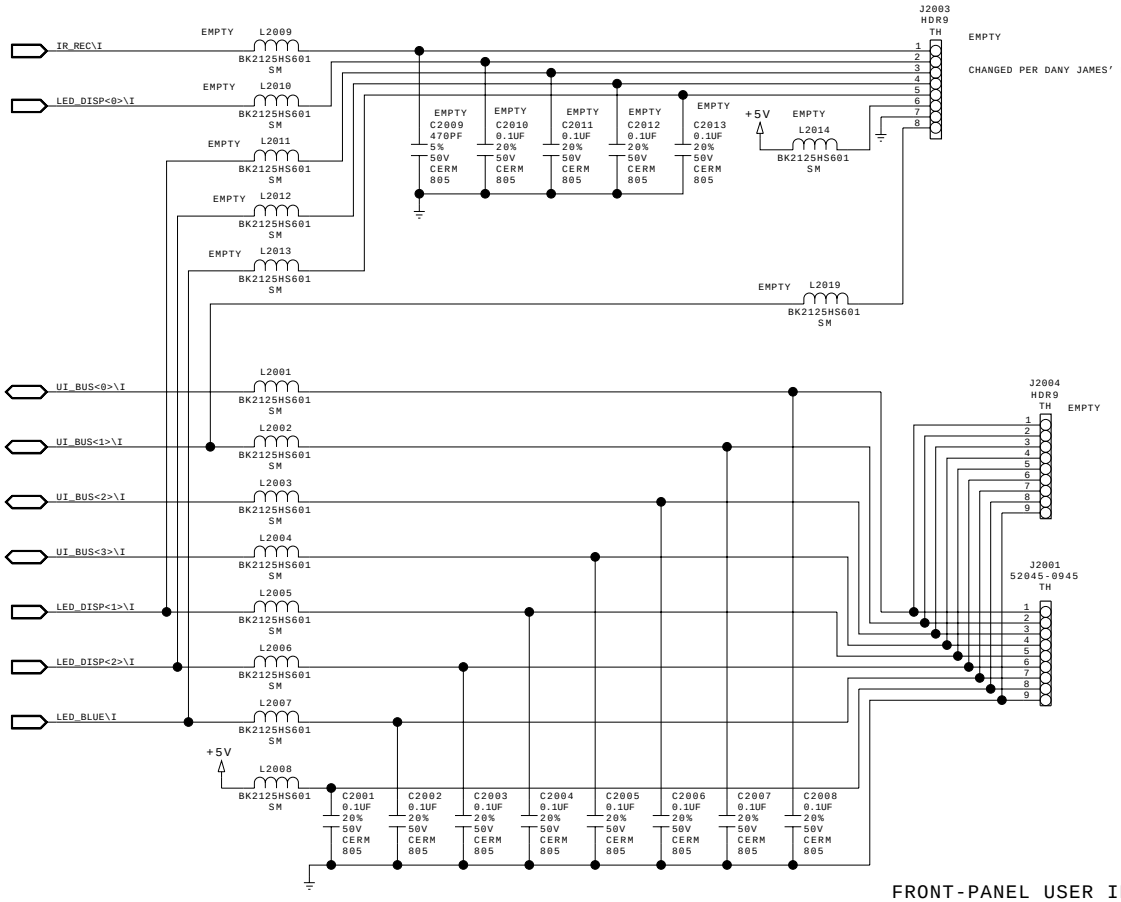

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LAST_MODIFIED=Mon Apr 17 13:24:59 2000

FRONT-PANEL USER INTERFACE FILTERS

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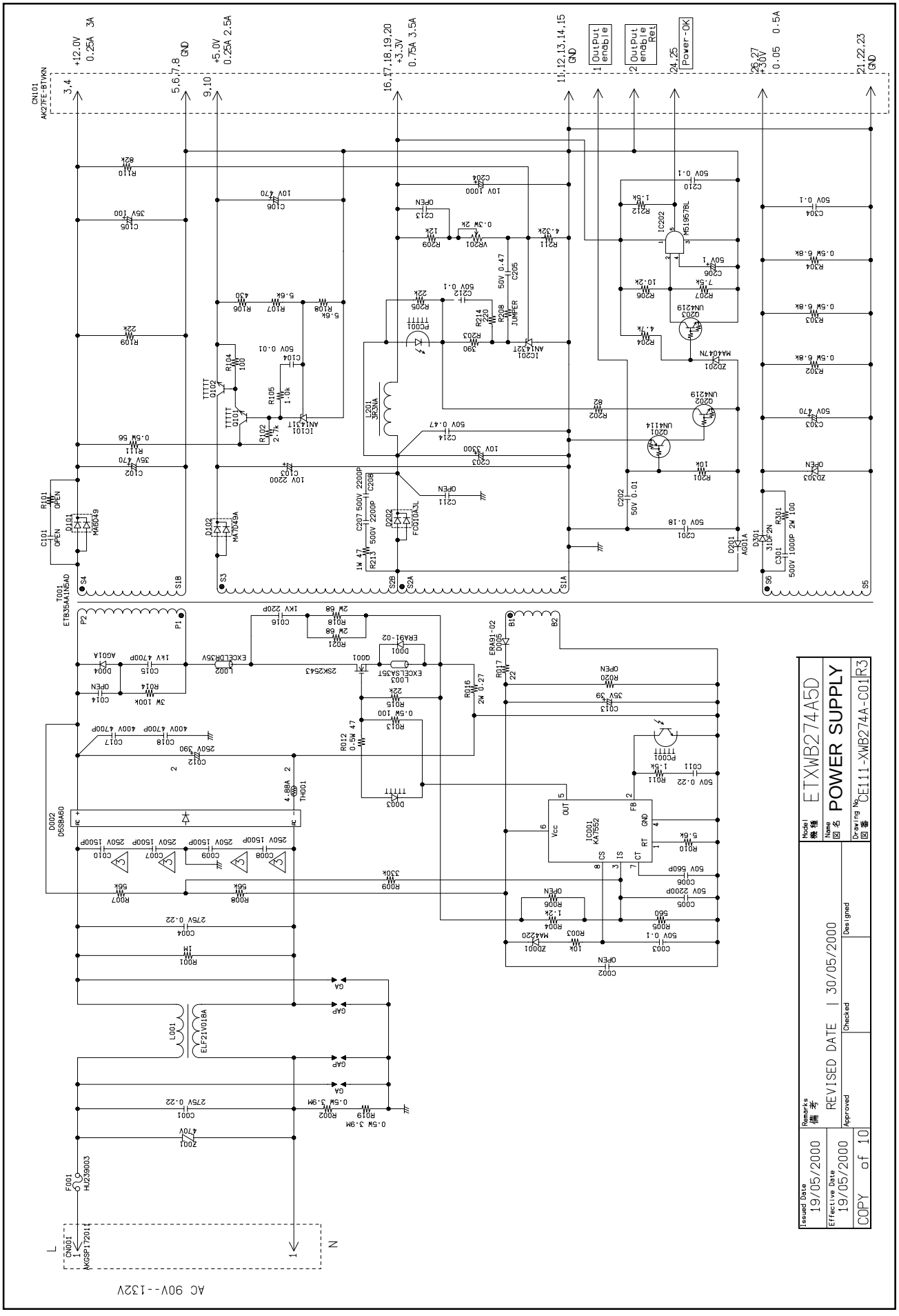
SET: ELMER	BLOCK: UI	DATE:	BLOCK REVISION: 0.0 PAGE: 1 of 1
ENGINEER: FULLER/EGNER	APPROVED:		SET REVISION: PVT PAGE: 37 of 37


POWER SUPPLY
ETXWB274A5D
CE111-XWB274A-C01R3
REVISED DATE | 30/05/2000
Issued Date 19/05/2000
Effective Date 19/05/2000
COPY of 10
AC 90V--132V

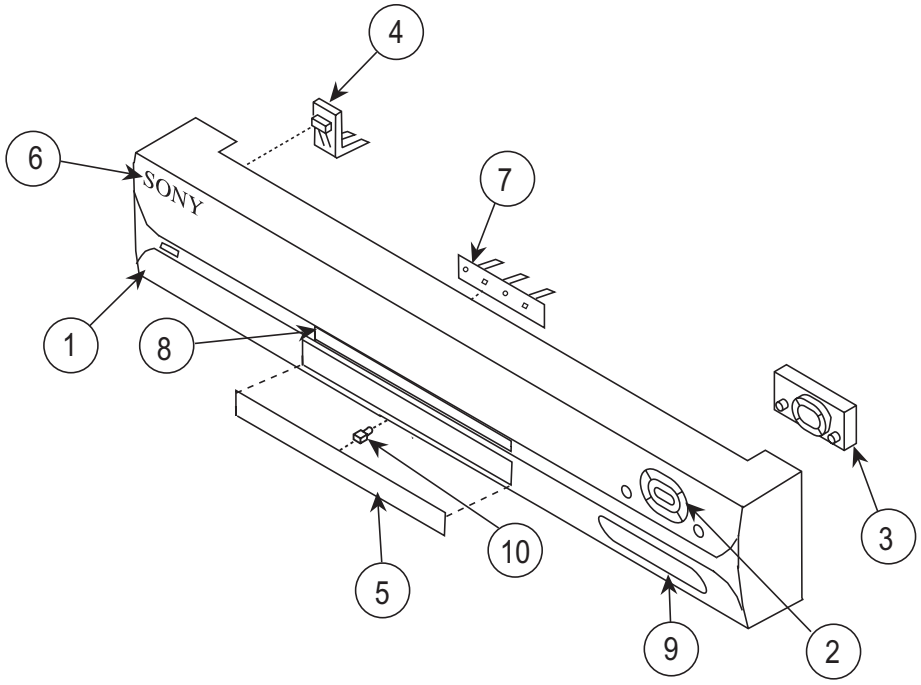
SECTION 5
EXPLODED VIEW

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The component parts of an assembly are indicated by the reference numbers in the remarks column.
- Items marked * are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

Note: **The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.**

Note: **Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.**

5-1. FRONT PANEL VIEW



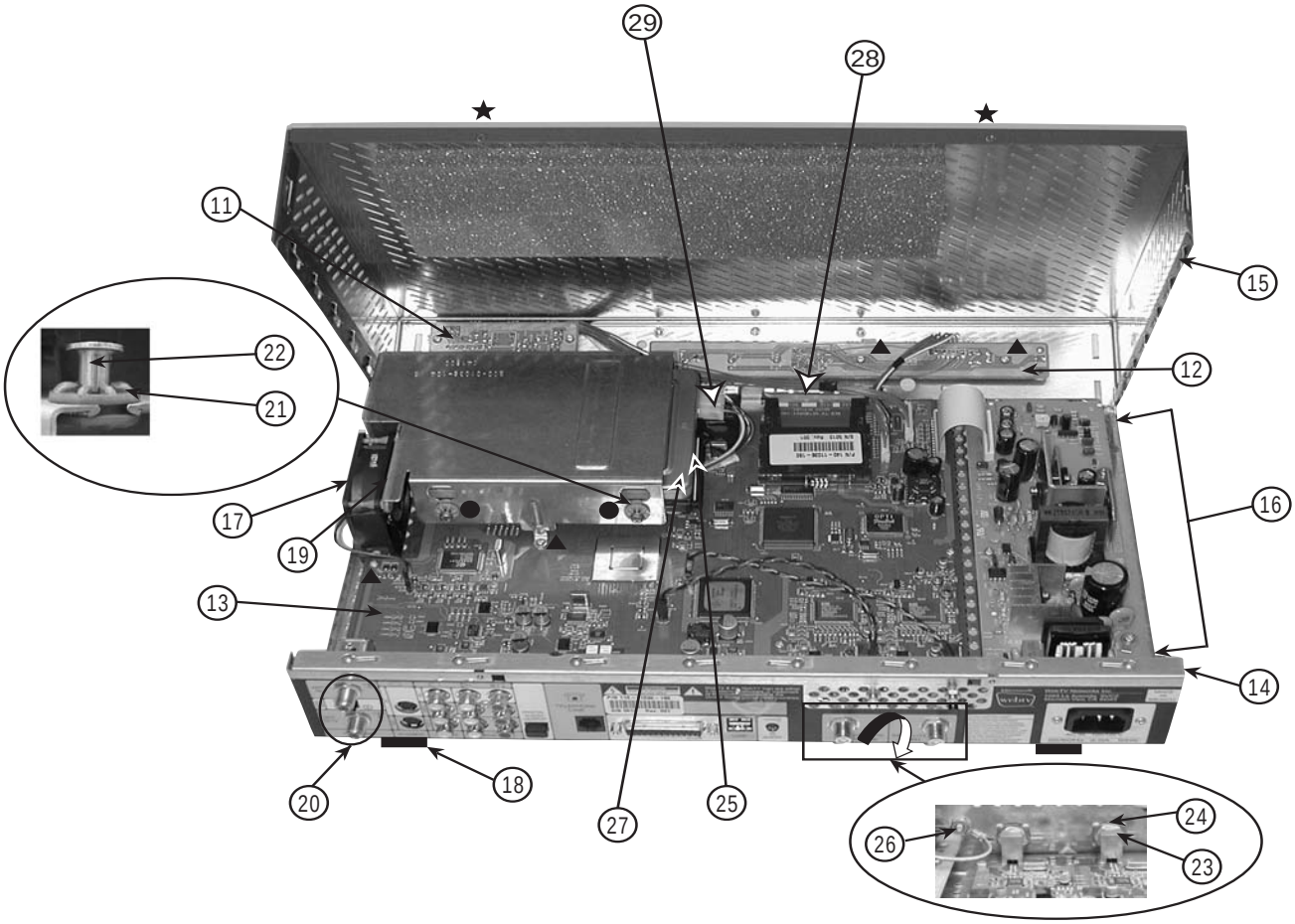
REF. NO.	PART NO.	DESCRIPTION	REMARK
1	X-4039-984-1	PANEL ASSY, FRONT	
2		BUTTON, CURSOR	(For location purpose only)
3		BUTTON, MULTI	(For location purpose only)
4		BUTTON, POWER	(For location purpose only)
5		DOOR	(For location purpose only)
6		EMBLEM (NO.5), SONY	(For location purpose only)
7		GUIDE, LED	(For location purpose only)
8		PANEL, INDICATOR	(For location purpose only)
9	4-079-948-02	CAP, A/V JACK	
10		CATCHER, PUSH	(For location purpose only)

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

5-2. REAR VIEW

★ 7-685-646-79 SCREW +BVTP 3X8 TYPE2 IT-3
▲ 7-685-871-01 SCREW +BVTT 3X6 (S)
● 4-080-137-01 SCREW (#6-32 X .50)



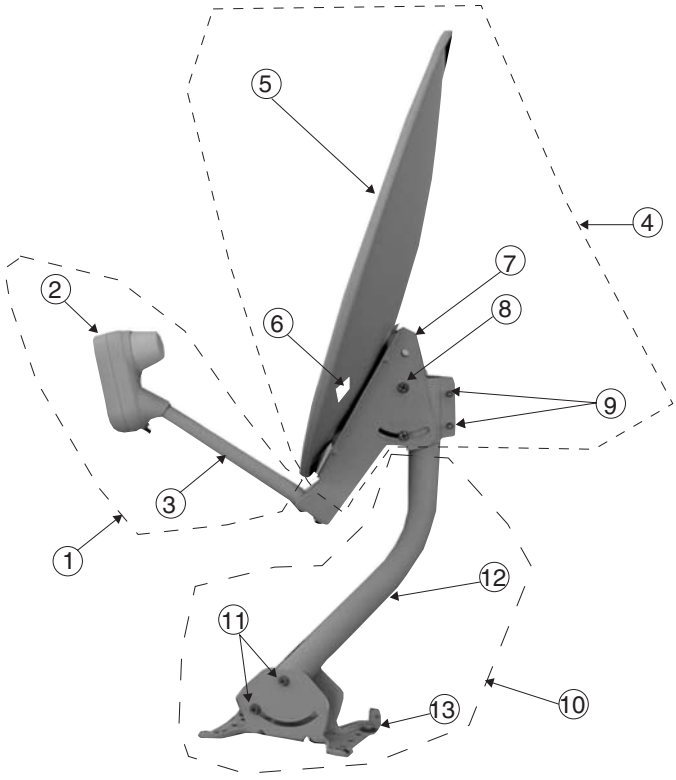
REF. NO.		PART NO.	DESCRIPTION	REMARK
11	*	A-1372-908-A	HA BOARD, MOUNTED	
12	*	A-1372-909-A	HB BOARD, MOUNTED	
13	*	1-761-405-12	MAIN PC BOARD	
14	*	4-079-593-01	CASE, LOWER	
15	*	4-082-119-01	CASE, UPPER	
16	⚠	1-468-574-11	POWER SUPPLY	
17		4-079-599-01	FAN	
18	*	4-064-828-01	FOOT	
19		4-079-949-01	RUBBER, FAN MOUNT	
20		3-682-691-00	NUT, WASHER HEXAGON	
21		4-079-950-01	GROMMET DAMPENING	
22		4-080-139-01	GROMMET, METAL FERRULE	
23		4-080-474-01	NUT (3/8) PANEL	
24		4-080-475-01	WASHER (3/8 DIA), PANEL	
25	*	1-900-803-33	CABLE, RIBBON 40P	
26		4-080-138-01	NUT (6/32), HEX	
27		9-885-019-98	HDD (ST340810ACE)	
28		9-885-015-30	EMI SHIELD PLATE	
29	*	1-900-803-34	CONNECTOR ASSY, HD 4P	

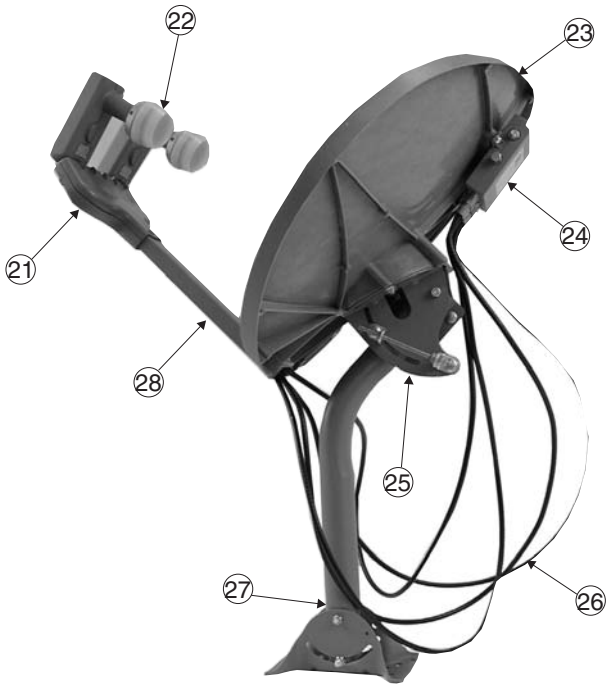
5-3. SAN-18D4

REF. NO.		PART NO.	DESCRIPTION	REMARK
1	*	X-4035-040-2	ARM ASSY, LNB11-13	(2,3)
2		8-598-326-02	CONVERTER, BS SAC-DA201	
3	*	4-061-590-01	ARM, LNB SUPPORT	
5		4-061-583-01	REFLECTOR	
4		X-4035-039-2	REFLECTOR MOUNT ASSY	(5-9)
6	*	4-061-576-11	MODEL NUMBER LABEL	
7		4-061-584-01	MOUNTING BASE REFLECTOR	
8		4-061-581-01	BOLT, 1/4- 20 UNC x 1/2 FORMING	
9		4-061-587-01	BOLT, 1/4-20 UNC X 7/8	
10		X-4035-030-1	MOUNT ASSY, UNIVERSAL	(8-9)
11		4-061-591-01	BOLT, 1/4-20 UNC x 1/2	
12	*	4-061-588-01	UNIVERSAL MOUNT MAST	
13	*	4-061-589-01	UNIVERSAL MOUNT FOOT	

PACKAGING / ACCESSORY ITEMS NOT SHOWN:

	4-049-203-01	WATERPROOF COVER
	4-049-478-01	CLIP (2)
	3-867-457-21	INSTRUCTION MANUAL
	4-061-577-11	CARTON





5-4. SAN-24MD1

REF. NO.		PART NO.	DESCRIPTION	REMARK
21	*	9-885-008-31	LNB HOUSING	
22	*	9-885-008-26	LNB DUAL OUTPUT (2)	
23		9-885-008-21	REFLECTOR	
24		9-885-008-27	OUTDOOR MULTI-SWITCH 4X4	
25	*	9-885-008-23	TILT AZ-EI ASSEMBLY	
26		9-885-008-28	CABLE SET	
27		9-885-008-24	UNIVERSAL MOUNT ASSY	
28	*	9-885-008-25	LNB SUPPORT ARM	

ACCESSORY ITEMS NOT SHOWN:

*	9-885-008-29	HARDWARE BAG
	9-885-008-30	HARDWARE BAG FINE TUNE ADJ.

HA HB

SECTION 6
ELECTRICAL PARTS LIST

Note:

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note:

Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

- Items marked * are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS
- All resistors are in ohms
- F : nonflammable

When indicating parts by reference number, please include the board name.

HA

* **A-1372-908-A HA BOARD, MOUNTED**

CONNECTOR

REF. NO.		PART NO.	DESCRIPTION	REMARK
CN001	*	1-564-524-11	PLUG, CONNECTOR 9P	

DIODE

REF. NO.	PART NO.	DESCRIPTION	REMARK
D001	8-719-911-19	DIODE 1SS119-25TD	
D002	8-719-911-19	DIODE 1SS119-25TD	
D003	8-719-911-19	DIODE 1SS119-25TD	
D004	8-719-911-19	DIODE 1SS119-25TD	
D005	8-719-911-19	DIODE 1SS119-25TD	
D006	8-719-911-19	DIODE 1SS119-25TD	
D007	8-719-911-19	DIODE 1SS119-25TD	
D008	8-719-911-19	DIODE 1SS119-25TD	
D009	8-719-911-19	DIODE 1SS119-25TD	
D010	8-719-911-19	DIODE 1SS119-25TD	
D011	8-719-911-19	DIODE 1SS119-25TD	
D012	8-719-911-19	DIODE 1SS119-25TD	
D013	8-719-911-19	DIODE 1SS119-25TD	

SWITCH

REF. NO.	PART NO.	DESCRIPTION	REMARK
S001	1-572-198-11	SWITCH, KEYBOARD	
S002	1-572-198-11	SWITCH, KEYBOARD	
S003	1-572-198-11	SWITCH, KEYBOARD	
S004	1-572-198-11	SWITCH, KEYBOARD	
S005	1-572-198-11	SWITCH, KEYBOARD	
S008	1-572-198-11	SWITCH, KEYBOARD	
S009	1-572-198-11	SWITCH, KEYBOARD	

HB

* **A-1372-909-A HB BOARD, MOUNTED**

CAPACITOR

REF. NO.	PART NO.	DESCRIPTION			
C050	1-124-589-11	ELECT	47µF	20%	16V

CONNECTOR

REF. NO.		PART NO.	DESCRIPTION
CN050	*	1-564-523-11	PLUG, CONNECTOR 8P

DIODE

REF. NO.	PART NO.	DESCRIPTION
D050	8-719-050-05	DIODE SLR-325VRT31
D051	8-719-060-26	DIODE SLR-325YCT31
D052	8-719-050-06	DIODE SLR-325MGT31
D053	8-719-069-45	DIODE SELU5E23C-TP15
D054	8-719-911-19	DIODE 1SS119-25TD
D055	8-719-911-19	DIODE 1SS119-25TD
D056	8-719-911-19	DIODE 1SS119-25TD

IC

REF. NO.	PART NO.	DESCRIPTION
IC050	8-742-207-20	HYB IC SBX3071-01

TRANSISTOR

REF. NO.	PART NO.	DESCRIPTION
Q050	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX

RESISTOR

REF. NO.	PART NO.	DESCRIPTION			
R050	1-216-033-00	RES-CHIP	220	5%	1/10W
R051	1-216-033-00	RES-CHIP	220	5%	1/10W
R052	1-216-033-00	RES-CHIP	220	5%	1/10W
R053	1-216-033-00	RES-CHIP	220	5%	1/10W
R055	1-216-017-91	RES-CHIP	47	5%	1/10W

SWITCH

REF. NO.	PART NO.	DESCRIPTION
S050	1-572-198-11	SWITCH, KEYBOARD

1-761-405-12 MAIN PC BOARD, COMPLETE

MAIN PC BOARD, COMPLETE		
Reference Number	**Sony Part Number**	**Part Description**
C0204, C0234, C0401, C0402, C0416, C0417, C0625, C0643, C0663, C1480, C1520, C1522-C1524, C1606, C1611, C1633, C1638, C1654, C1706, C1712, C1714, C1754, C2009, C2105, C2117, C2118, C2326, C2394, C2426	9-885-012-20	CAP-CER, 470PF
C0356, C1008, C1009, C1012, C1013, C1025, C1035, C1036, C1083, C1084, C1499, C1503-C1519, C1702-C1705, C1707, C1708, C1710, C1711	9-885-012-19	CAP-CER, 47PF
C0826	9-885-028-70	CAP-CER, 10UF, Y5V,+80/-20%,10V
C2392	9-885-028-65	CAP, AL-ELEC, 220UF, 20%,50V
C23101	9-885-028-71	CAP-CER, 1UF 5V, +80/-20%,50V
D0601	9-885-011-71	DIODE-BRDGERECT
D0701-D0708, D0801-D0809, D1007-D1012, D1101, D1401, D1501, D1701-D1704	9-885-011-75	DIODE-ARRAY
D1003	9-885-011-73	DIODE-LED
D2301, D2302, D2401, D2402	9-885-011-77	DIODE-VARACTOR
D2303, D2403	9-885-011-78	DIODE-ZEN, 5.1V
D2304, D2305, D2307-D2310	9-885-011-70	DIODE-RECT, SI, 200V, 2A
D2306	9-885-011-79	DIODE-ZEN, 20V3
D2311, D2312	9-885-011-76	DIODE-ZEN
F0601	9-885-012-22	PROT, POLYSW, TR600-150, 3A, 600V
J0601	9-885-011-24	CONN-TEL, RJ-11, 2
J1003	9-885-028-63	CON-AV, RCA, 3X3,SHLD,PCB
J1004	9-885-011-27	CONN-AV, S-VID, DUAL STACK
J1005	9-885-011-29	CONN-SMART, 8
J1010	9-885-015-31	CONN-SMART CARD
J1301		CONN-HDR
J1501	9-885-011-26	CONN-DSUB, SNGL, 25P
J1701	9-885-011-25	CONN-USB, DUAL STACK
J2301, J2401	9-885-011-28	CONN-COAX, F
L0201-L0203, L0601-L0603, L0701, L0802, L1001-L1003, L1007-L1009, L1026, L1081, L1083, L1085, L1088, L1407, L1414, L1421, L1422, L1425, L1429, L1498, L1499, L1602, L1603, L1701, L1704, L2001-L2014, L2019, L2301, L2302, L2304, L2311, L2313, L2401, L2402, L2404	9-885-012-24	FER, 600, 100MHZ, 200MA
L2305	9-885-028-68	IND, 11UH, 20%, 750MA, U/SHLD
Q0351	9-885-011-82	IC-MOSFET
Q0601	9-885-011-68	XSTR-PNP
Q0602	9-885-011-69	XSTR-FET
Q0801, Q0803-Q0806, Q0808-Q0811, Q1001, Q1002, Q1007, Q1008, Q1010, Q1014-Q1016, Q1401, Q2302, Q2304, Q2305	9-885-011-81	XSTR-NPN
Q0802, Q1003-Q1005, Q1009, Q1011	9-885-011-80	XSTR-PNP
Q0807, Q0812	9-885-011-72	XSTR-FET, N-CH, 2N7002
Q2301, Q2401	9-885-011-83	XSTR-NPN
Q2303	9-885-011-74	XSTR-FET
R0354	9-885-012-23	RES-PWR, 1%, 1/2W, 2010
R1501	9-885-028-69	RES, 1K, THK, 5% 1/16W,0603
U0203, U0205	9-885-011-84	IC-VREG, 2.5V
U0301	9-885-011-89	IC-CPU, 64BIT-RISC
U0351	9-885-012-04	IC-SWREG
U0401-U0404	9-885-011-67	MEM-SDRAM
U0504	9-885-028-66	MEM-MASK, MERCURY BOOT BLD
U0601, U0703, U0807, U1407, U2305, U2306	9-885-011-85	IC-VREG, +5V, 78M05ACDT, 500MA
U0604	9-885-011-94	IC-DAA, MODEM-SIDE, DM207, 5V, 10MA
U0605, U0606	9-885-011-95	IC-DAA, LINEOPTCPLR, IL388, 5V, 450MW
U0607	9-885-011-93	IC-DAA
U0650	9-885-011-96	IC-CODEC, STEREO
U0701	9-885-011-98	IC-FILT
U0801	9-885-011-97	IC-CODEC, 2-CH AUDIO
U0802, U0805, U0808, U0809	9-885-011-88	IC-OPAMP, SINGLE SUP
U0804, U0806	9-885-012-02	IC-SW, QUAD BILATERAL
U1	9-885-011-30	IC-ASIC
U1002	9-885-028-67	CONN-OPT, XMTR, 3MB/SEC,5V
U1008	9-885-012-07	IC-SMART
U1103	9-885-011-66	MEM-SSID
U1401	9-885-011-23	SUBASSMBLY-MODULATOR
U1403	9-885-011-99	IC-DCDR, VIDEO
U1404	9-885-012-00	IC-SW, DUAL FET BUS
U1501, U1502	9-885-012-01	IC-SW, 10BIT BUS
U1601	9-885-011-65	IC-ASIC
U1650, U1750	9-885-011-91	IC-CLKGEN
U1701	9-885-012-03	IC-INTFC
U1702	9-885-012-09	IC-USB
U2101, U2104	9-885-011-92	IC-CLKGEN, VXCO
U2102	9-885-011-90	IC-CLKGEN
U2301, U2401	9-885-012-05	IC-TUNER
U2302, U2402	9-885-012-06	IC-TUNER
U2303, U2309	9-885-011-87	IC-VREG, 15-25V, LNBP13SP, 900MA
U2305/2306	9-885-028-64	IC-VREG, +5V 500MA, 5%, D-PAK
U2307, U2308	9-885-011-86	IC-VREG, +3.3V, 1117CST, 800MA
U2310	9-885-012-08	IC-SWREG

1-761-405-12 MAIN PC BOARD, COMPLETE

Reference Number	Sony Part Number	Part Description
Y0601	9-885-012-13	XTAL, 4.096MHZ
Y10100	9-885-012-14	XTAL, 18.432MHZ
Y1401	9-885-012-12	XTAL, 14.31818MHZ
Y1650	9-885-012-16	XTAL, 33.000MHZ
Y1750	9-885-012-17	XTAL, 48.000MHZ
Y2101	9-885-012-15	XTAL, 25.600MHZ
Y2102	9-885-012-10	XTAL, 12.2727MHZ
Y2103	9-885-012-11	XTAL, 12.288MHZ
Y2301, Y2401	9-885-012-18	XTAL, 5.000MHZ

REF.NO.	PART NO.		DESCRIPTION	REMARK
			ACCESSORIES AND PACKAGING	
	1-769-758-11		CABLE, MODULAR (WITH PLUG)	
	4-079-602-02	*	CARTON, INDIVIDUAL	
	1-575-335-21		CORD, CONNECTION (S VIDEO)	
	1-751-271-12		CORD, CONNECTION (AV)	
	1-558-226-11		CORD, CONNECTION (COAXIAL)	
	4-079-600-01		CUSHION, RIGHT	
	4-079-943-22		MANUAL, INSTRUCTION	
	1-779-110-11	*	PLUG, ADAPTOR	
	1-782-913-21		IR BLASTER	
	1-783-722-11	⚠	CORD SET, POWER	
			REMOTE COMMANDER	
	1-476-337-11		REMOTE COMMANDER (RM-Y804)	
	4-978-977-01		BATTERY COVER (RM-Y804)	

REF.NO.	PART NO.	DESCRIPTION	REMARK

9-965-897-02

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Sony Technology Center
Technical Services
Service Promotion Dept.

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SERVICE MANUAL

SAT-W60 RM-Y804

U.S. Model

ORIGINAL MANUAL ISSUE DATE: 10/2000

ALL REVISIONS AND UPDATES TO THE ORIGINAL MANUAL ARE APPENDED TO THE END OF THE PDF FILE.

REVISION DATE	REVISION TYPE	SUBJECT
10/2000	No revisions or updates are applicable at this time.	
10/2002	Manual Updated.	

INTERNET TERMINAL

SONY®

9-965-897-02

PRINTING THE SERVICE MANUAL

The PDF of this service manual is not designed to be printed from cover to cover. The pages vary in size, and must therefore be printed in sections based on page dimensions.

NON-SCHEMATIC PAGES

Data that does NOT INCLUDE schematic diagrams are formatted to 8.5 x 11 inches and can be printed on standard letter-size and/or A4-sized paper.

SCHEMATIC DIAGRAMS

The schematic diagram pages are provided in two ways, full size and tiled. The full-sized schematic diagrams are formatted on paper sizes between 8.5" x 11" and 18" x 30" depending upon each individual diagram size. Those diagrams that are LARGER than 11" x 17" in full-size mode have been tiled for your convience and can be printed on standard 11" x 17" (tabloid-size) paper, and reassembled.

TO PRINT FULL SIZE SCHEMATIC DIAGRAMS

If you have access to a large paper plotter or printer capable of outputting the full-sized diagrams, output as follows:

1) Note the page size(s) of the schematics you want to output as indicated in the middle window at the bottom of the viewing screen.

2) Go to the File menu and select Print Set-up. Choose the printer name and driver for your large format printer. Confirm that the printer settings are set to output the indicated page size or larger.

3) Close the Print Set Up screen and return to the File menu. Select "Print..." Input the page number of the schematic(s) you want to print in the print range window. Choose OK.

TO PRINT TILED VERSION OF SCHEMATICS

Schematic pages that are larger than 11" x 17" full-size are provided in a 11" x 17" printable tiled format near the end of the document. These can be printed to tabloid-sized paper and assembled to full-size for easy viewing.

If you have access to a printer capable of outputting the tabloid size (11" x 17") paper, then output the tiled version of the diagram as follows:

1) Note the page number(s) of the schematics you want to output as indicated in the middle window at the bottom of the viewing screen.

2) Go to the File menu and select Print Set-up. Choose the printer name and driver for your printer. Confirm that the plotter settings are set to output 11" x 17", or tabloid size paper in landscape ( ) mode.

3) Close the Print Set Up screen and return to the File menu. Select "Print..." Input the page number of the schematic(s) you want to print in the print range window. Choose OK.

TO PRINT SPECIFIC SECTIONS OF A SCHEMATIC

To print just a particular section of a PDF, rather than a full page, access the Graphics Select tool in the Acrobat Reader tool bar.

1) To view the Graphics Select Tool, press and HOLD the mouse button over the Text Select Tool which looks like:
This tool will expand to reveal to additional tools.
Choose the Graphics Select tool by placing the cursor over the button on of the far right that looks like:

2) After selecting the Graphics Select Tool, place your cursor in the document window and the cursor will change to a plus (+) symbol. Click and drag the cursor over the area you want to print. When you release the mouse button, a marquee (or dotted lined box) will be displayed outlining the area you selected.

3) With the marquee in place, go to the file menu and select the "Print..." option. When the print window appears, choose the option under the section called "Print Range" which says "Selected Graphic".

Select OK and the output will print only the area that you outlined with the marquee.

(continued >)

ON-SCREEN SEARCH OPTION

All of the text within the service manual PDF is content searchable. This means that you can enter any text, word, phrase or reference number that appears in the manual, and the PDF software will search, find and move the cursor to the location where you requested text first appears. This feature can be particularly useful in locating components on a specific schematic or printed wire circuit board (PWB) diagrams.

Follow these steps to effectively locate a component on a schematic diagram:

1) Locate the schematic you want to search by clicking on the corresponding bookmark on the left side of the screen. The view on the right of the screen will then jump to the desired schematic page.

2) Magnify the diagram to at least 400% before conducting a component search. This will enable you to easily view the reference number when it is highlighted on screen. To do this, click on the magnifying glass button on the tool bar at the top of the screen. Move the cursor over the diagram and RIGHT click you mouse. Select the 400% magnification option on the pop-up menu. Click on the button with the icon of the open hand to deactivate the magnification tool

3) Search the diagram (or the entire manual) by clicking on the binocular button tool at the top of the screen. The “Find” window will appear and allow you to type in your desired text. Type in a reference designator, such as R502, and click on the “Find” button. If the component is not on the diagram, but is listed anywhere else in the manual, the cursor will jump to the first location the text is found in the file. To find another instance of that same text, click on the binocular button again and select “Find Again.”